Recent Advances In

DIAGNOSTIC PSYCHOLOGICAL TESTING

• A CRITICAL SUMMARY •

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DIAGNOSTIC PSYCHOLOGICAL TESTING

• A CRITICAL SUMMARY •

With Contributions by

Robert E Harris, Ph D
James G Miller, M D , Ph D
George A Muench, Ph D
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FOREWORD

THIS MONOGRAPH contains concise critical reviews of the recent applications of diagnostic psychological methods in the fields of counselling and psychotherapy, psychiatry and psychosomatic medicine, clinical neurology and child development Advances in mental test construction and interpretation are described and discussed The direction of probably fruitful future application and research is considered Each contributor is an authority in his particular field

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Recent Advances In

DIAGNOSTIC PSYCHOLOGICAL TESTING

• *A CRITICAL SUMMARY* •

I

CONTEMPORARY TRENDS IN PSYCHODIAGNOSIS

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SUMMARIZING present developments in psychodiagnosis offers some of the excitement of fishing for trout, since the current of the stream of events in this field is flowing rapidly and there is much vigorous activity. Of these developments, the most significant has been the revolt against the nosological categories of Kraepelin and Bleuler Modern diagnosticians, in picturing the personality, no longer employ such stable, structural similies as a building or a box, but rather they choose terms which suggest flux and process. The personality is viewed as a complex of variables in dynamic interplay, all constantly changing like flickering flames in a fireplace, but with the whole nevertheless maintaining a characteristic configuration which distinguishes the individual

Because each personality has its own patterning, diagnosticians now commonly recognize that forcing it to be classified in one category or another frequently means that certain aspects of it are neglected or distorted And, once such categorizing is accomplished, there is the hazard that the individual may come to be looked upon as a typical representative of his class rather than as a person of unique configuration. That a patient has been labeled as a "psychopathic personality," as being "extratensive," or as having "cortical atrophy" unfortunately often comes to dominate all thinking about him Frequently the result is that he is handled clinically in a stereotyped manner, unsuited for him to the degree that he differs from the typical example of his diagnostic class

Because its components are conceived of as being multiplex and interrelated, description of the personality has become much more complex than it formerly was The dimensions of the personality must be measured, their relationships must be plotted, and all this must be done while every aspect is in flux The psychodiagnostician now must do far more than produce a numerical IQ for the case record or decide upon the title of a disease entity to be put on the census card—such simple descriptions inadequately represent the whole fullness of personality

The first step in making satisfactory descriptions must be common agreement on terms Basic psychological research is being conducted by Cattell and others to determine what the dimensions of personality are with which everyone should be concerned, for there is no agreement about even this elementary issue Psychodiagnostics is in a comparable state to that which physical diagnosis would be in if no common concurrence could be reached as to the planes in which to measure the body or the dimensions of length, width and depth

When all can agree about what traits to consider in describing an individual—and various stastistical methods will be helpful in bringing about such a consensus—then it will be possible to work toward a more systematic classification of normal and abnormal personality than we now have The concepts used will not be static and they will not be merely descriptive, but will demonstrate the etiological relationships among the various traits Techniques of cluster and factor analysis are now becoming available which can augment the clinical method and demonstrate quantitatively how symptoms and signs, indices of traits, co-vary to form syndromes Eventually, by such methods, standardized empirical nosologies may be developed which are based on carefully measured and organized systematic observation of cases rather than on clinical impressionism which has been resorted to in the past

Such a new rationale for diagnosis will have many and varied sorts of usefulness in the clinical psychological sciences It will make possible operational definitions of the systematic distinctions among human beings which will be much more reliable than the clinical categories at present in use Agreements among diagnosticians will thus be improved Their decisions will therefore be much more useful as criteria against which to validate new diagnostic instruments and in terms of which to evaluate the changes caused by new therapeutic methods The improvement, by such basic personality studies, of the criteria for correct diagnosis and for effective therapy is the most important single research problem of psychodiagnostics

Not only can statistical methods be employed in basic research on the dimensions and syndromes of personality, but also more and more quantification can profitably be carried out on each diagnostic measure The development of careful standards and norms for such procedures, not only objective tests of intelligence, aptitudes, and attitudes, but also projective tests, is imperative Such standards will eventually be established for both sexes, all ages, various socio-economic groups, nationalities, races, languages, and all other characteristics which importantly influence test results Such procedures will make diagnostic instruments far more accurate and effective than they have been, because the allowances which in the past have been made intuitively by clinicians in interpreting test findings can then actually be calibrated into the procedure It will be a long time before anything like complete quantification of the Rorschach and other projective tests is accomplished, but it is important nevertheless that research be carried out leading toward such goals, so that the psychological sciences will have available a number of clinical thermometers which can be used throughout a person's lifetime or a patient's clinical course to measure changes in the many facets of his personality

Zubin has indicated various ways to improve such techniques—developing new scales for objectifying scoring methods which have been found clinically useful; reducing present complex clinical diagnostic instruments to a number of simpler procedures; employing instrumentations, like tachistoscopic exposure, to simplify the test stimuli and also to standardize stimulus presentation more effectively When such research has been done, much less of psychodiagnostics will be guided by the rules of the intuitive clinician's thumb For the good diagnostician, such advances may not be necessary, because he may consistently make the proper allowances for individual deviations in test procedures But the mediocre clinician is another matter If the demand for psychodiagnosticians increases, the number of marginally effective clinicians is likely also to increase, and, for them at least, greater precision and reliability of methods are highly desirable

One recent trend in psychodiagnostics which is of special interest is the entrance of academic psychology into the field of clinical diagnostics This development also is adding precision to psychodiagnostics Much of the traditional product of the psychological laboratory has seemed to many to be futile because it has concerned itself with minute aspects of human behavior, particularly sensory and perceptual functions, which often have little relevance to the major problems of human life Now, however, experimental clinical psychology with its applications to the problems of psychodiagnostics, has rather rapidly become one of the most promising areas in psychology. Investigations have shown that a number of relatively precise measures of personality can be developed out of our body of knowledge concerning neurophysiology and biology The coalescence of neurology and psychology is underway, and many of the "pure" sensory and perceptual studies of an earlier period have now generated diagnostic methods, because it has been found that there are distinct differences, by a number of such measures, among the representatives of the various diagnostic categories Some of this work involves simply the application of methods of measurement which have been used in various psychological fields for some time, in order to refine and quantify classical procedures of clinical neurology Other methods are quite new The result of these developments is that within ten years clinical psychologists may well arrive at their diagnoses not with pencil and paper tests and ink blots alone, but with an imposing array of new instruments which for the first time will really justify calling their places of work laboratories.

There are evidences that psychodiagnosis, which has long been "sociotropic," to use Boring's term, is now becoming somewhat more "biotropic." Methods of evaluation eventually will include sociological measures, reflecting the influence of the culture, but also physiological measures which fade imperceptibly into physical diagnosis We shall work toward the total description of the status and characteristics of a constantly changing organism, the total diagnosis of the individual, which can possibly be expressed in one over-all "physiopsychograph."

One of the most significant changes in emphasis in modern psychodiagnostics is the increasing orientation toward therapy, the evaluation of tests primarily in terms of their therapeutic relevance. Some have suggested that the application of diagnostic tools in itself has a therapeutic effect Whether or not this be so, it is certain that making diagnostic studies definitely affects the relationship between the therapist and the patient This is true whether the therapist or someone else employs the diagnostic methods We have not yet clearly evaluated the importance of the different types of relationships which can exist between diagnostician and therapist

Clinicians of deviant viewpoints, psychoanalysts, client-centered counselors, and others, have seriously questioned whether diagnosis is necessary for therapy at all This issue has been raised for various reasons In some cases, therapists have rejected diagnostic findings whenever, in a given case or group of cases, there is a disparity between their opinions and these findings Others have taken this point of view for more theoretical reasons—for example, that it is possible to learn as much or more than all present diagnostic instruments can show us in the span of a few psychotherapeutic interviews Since the interviews are the only part of the clinical course essential to bring about improvement, these clinicians consider separate formal diagnosis an unnecessary waste of time Other therapists insist that they learn much more significant and coordinated material than can be discovered by any standardized testing method, particularly if the therapeutic course is of any length

A searching contention about the relation of diagnosis to therapy is the belief that the diagnostic attitude, essentially a stepping-aside to make a cool analysis and observation of the patient, is actually harmful to the therapeutic course and consequently hinders rather than helps therapy The theoretical assumption behind this contention is that the permissive, non-judgmental, empathic relationship of the therapist to the patient is the most important single therapeutic factor, and that this relationship is seriously damaged if the therapist in any way implies he is comparing the patient with others or intellectually studying him instead of trying emotionally to feel closely with him

Obviously, we are only in the early stages of discussion of whether psychotherapy is similar to medical therapies in demanding accurate diagnosis before the therapeutic course begins, or whether there is some essential difference in this form of therapy which requires a different attitude toward diagnosis It is interesting to contemplate what would be the effect on the functions of clinical psychologists if the neuropsychiatric team should come to accept that psychodiagnosis is useless or harmful to therapy The result might be that psychologists, who historically first entered the clinic as diagnosticians, would find themselves devoting their efforts chiefly to therapy and research, diagnosis except as a research tool becoming definitely a minor function

There can be no question that various psychodiagnostic methods are of great importance in research, both on basic personality theory and on the nature of the processes which change personality, particularly psychotherapy Muench calls to our attention ways in which diagnosis has been oriented to therapy to determine treatability of the patient, to determine the success of therapy, to study the process of therapy, to make a comparative evaluation of therapeutic techniques. The basic design for evaluating a total therapeutic course or any segment of it must be. diagnosis of the condition before the therapy, measurement or description of the procedures employed; diagnosis of the condition afterward, in order to measure the change There seems to be no other basic design for making a clearcut evaluation, even though many clinicians may not agree that this is the only method Those clinicians who believe diagnosis is undesirable or actually harmful to therapy will find themselves in a methodological dilemma, because, if there is no determination of the status of the patient before and after therapy, it will be impossible to get any precise measure of change Without precise measurement, there will always be disagreement among observers about the effectiveness of the therapy

The therapeutic interview itself can be conceived of as a diagnostic tool of great research importance, having in common with other test techniques the observation of a person in a standard situation It can be a microscope, to use Freud's figure, which makes possible the systematic study of both deep and superficial layers of personality under controlled conditions of rapport, in basic research devoted to developing generalized statements about psychological principles Certain psychoanalysts believe that their primary function, as implied by the term "psychoanalysis" itself, is a thoroughgoing and precise study of the personality Of course the chief goal is therapy in the individual case, but some analysts devote themselves primarily to diagnosis and indeed some admit that their method is at present a more valuable investigative than therapeutic tool The chief weakness of the interview as a diagnostic method at present is that it has not been standardized as well as the other test situations More progress in this direction is being made in public opinion polling than in strictly clinical fields

When the relations between diagnosis and therapy are being discussed, it is important not to forget that concern for psychotherapy is stimulating progress in the area of psychometrics. A number of new diagnostic techniques have been developed especially to evaluate the sort of change in personality which occurs primarily in psychotherapy. Recognition of the importance of the interpersonal relationship between therapist and patient has led to consideration of the use of diagnostic methods to study the personality of the therapist, so that this factor in the rapport situation can be better understood and controlled

Harris and others emphasize the fact that diagnosis must be socially relevant—that is, the individual must not be studied as a separate unit isolated from the rest of the world, but considered in the light of all the complexities of his interpersonal relations His role in the "family romance" highlighted by Freudian theory is one such relationship However, his socio-economic status, social mobility, group memberships, social attitudes, and similar characteristics must also be taken into consideration just as if they were inherent variables of his own personality Standardization of testing situations makes possible comparing the individual with others on such traits, that is, viewing him in terms of his society. Methods like diagnostic psychodrama and situational tests will undoubtedly have increasing importance in the future because they make possible direct measurement of social interaction

The mention of such new testing procedures brings us to our last point Such techniques are clearly different from the examinations traditionally made by psychometricians The present diagnostician has a broad armamentarium indeed, including not only standard tests of intelligence, attitudes, aptitudes, personality inventories and other pencil and paper tests, but also the multitude of projective techniques of which new examples are appearing all the time, free and controlled association, measurements of individual differences in sensation, perception, and many of the higher mental processes, psychodramatic diagnostic techniques and their derivatives, and controlled and free interviewing methods It is clear that the psychodiagnostician of the future must be an expert in all the techniques used by the psychometrist of the past and also in many others He must also know experimental psychology and understand the statistical methods which have been devised for standardizing and analyzing his instruments, he must, moreover, be thoroughly conversant with matters of interpersonal relations, problems of rapport, and nuances associated with understanding the place of the individual in his society Such demands seem so great that they would appear likely to break even a strong camel's back, and yet it is difficult to see how the preparation of an adequate, up-to-date diagnostician could be less

There is room for much doubt whether a mere technician can do most of these tasks, and one of the unsolved issues in psychodiagnosis is what functions can be carried out by a technician and which require fully trained persons Also there is a great question whether diagnosis and therapy should be delegated to separate professional groups in the psychological sciences Certainly nowhere else in clinical practice, even in radiology, are they so conscientiously divided and the requisite training for each so carefully distinguished This legal separation would appear likely soon to end so that they will not much longer dwell professionally in different abodes

II

PSYCHODIAGNOSTIC TESTING IN PSYCHIATRY AND PSYCHOSOMATIC MEDICINE

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AS A BACKGROUND for evaluating recent advances in psychodiagnostic testing in psychiatry and psychosomatic medicine, let us first review the current state of affairs in these two fields Three important trends are emerging

1 Diagnosis is becoming a quite different affair from the conventional descriptions in the textbooks of psychiatry Revolts against the classificatory system which has survived from Kraepelin are fashionable, and Adolf Meyer is often quoted as saying, "We don't need a diagnosis, we understand the patient" Occasionally this covers a simple reluctance to think analytically and conceptually about patients, but more positively it represents (a) a recognition of the variability within categories and of the overlap between them, and (b) a preference for other kinds of variables and concepts than those studied by Kraepelin, Bleuler and their direct descendants As examples, we have what are called symptomatic diagnoses, genetic (developmental) diagnoses, and dynamic diagnoses The newer variables which are included are derived largely from psychoanalytic studies and from the idea that the determiners of behavior are to be found both inside and outside the patient As an example of a comprehensive diagnostic statement we might cite that made by

Erikson in the case of a boy who was referred for setting fires (7) For Erikson the diagnosis involved a synthesis of temperament, which in this boy was vigorous, his maturational stage, which was phallic-urethral-locomotor; his social stage, the oedipal; his social situation, living with women, his capacities, muscular and mechanical, his father's temperament and defenses, counterphobic, and an acute historic prototype, the aggressive hero

2 With progress in psychotherapy, diagnosis is becoming more and more a matter of assaying "therapeutically relevant" variables, i e , those which are related to what happens in therapeutic interviews—the resistances, the defenses, the strength of the ego, the amount and quality of the anxiety and its sources, the quality of reality testing, etc. These variables are defined and understood both as they are inferred from the historical reconstruction of a life history and, more importantly, as they appear in the interaction between therapist and patient.

3 The social reference of psychiatric disorders is becoming more and more recognized; this takes many forms In Sullivan it results in a definition of psychiatry as the study of interpersonal relations (23) In recent research in schizophrenia it appears in the statement that the disorder can best be understood as a "disarticulation from the social context" (15). In Erikson it becomes the analysis of historical prototypes or the residuals of group identities supporting the ego identity (7). In Kardiner it involves analysis of preliterate societies (14) In the Group for the Advancement of Psychiatry it results in a definition of psychotherapy which stresses the interaction of therapist and patient, and everywhere it appears as at least lip-service to the phrase, "the importance of social factors "

Within the field of psychosomatic medicine there are similar trends, and the close relationship of these disorders to the neuroses is widely accepted. Unfortunately, psychosomatic medicine has taken on a proseletyzing aspect as it progressively invades more and more the specific fields of medicine This has been at the expense of research into etiology and therapy. To be sure, some differences among different disease groups have been established and elaborate theoretical rationales suggested, but most of the research in this area merely asserts plausible relations and actually demonstrates only that patients with physical disease syndromes may also have neurotic problems This has proven to be a difficult field for research, and many hypotheses, for example, the specificity of personality structure and "choice" of syndrome, need careful, incisive research.

Historically, problems selected for research by clinical and medical psychologists have been dictated by current trends in psychiatry This may be either good or bad, depending on what one thinks clinical and medical psychologists ought to be doing, but setting aside that question temporarily, I should like to offer as an initial guide for evaluating current research in psychodiagnostic testing the proposition that only research which takes account of these trends is likely to have an important effect on psychiatric theory and practice

By this criterion, a great deal of research in psychodiagnostic testing is of limited value. (Of course, this is not to deny that it may have value for other purposes) Survey of recent titles indicates that the most common research design is a simple comparison of test findings obtained from two or more clinically diagnosed groups of patients, or from a single diagnostic group and a group of "normals," the latter either newly selected or taken from a standardization group Typical examples are the studies of Wechsler-Bellevue patterns in schizophrenia and the attempts to validate any of the flood of new projective methods Quite apart from the primary weakness of this approach, namely the unreliability of clinical diagnosis, even positive results can provide the practicing psychodiagnostic tester ground only for such circumlocutions as "the patient produced a pattern of scores characteristic of patients clinically diagnosed schizophrenic" Compulsively, he should add a probability statement taking account of the degree of separation of schizophrenics from non-schizophrenics And then he would be faced with the question, "What is the cash value of calling someone schizophrenic?" Of course, he could go on to describe what is known about schizophrenics on the basis of other kinds of evidence—for example by specifying the criteria by which the cases were originally classified, or perhaps by quoting Bleuler; but in any case statements about patients would be limited to those which are a function of class membership, and, the clinician will complain, the flavor of the individual patient is not captured In actual practice psychodiagnostic testers refuse to be constrained by questions about the logical ground for their interpretations Certainly the wide acceptance which they are finding in hospitals and clinics depends more on the substantive richness of their case work-ups than on the logical compellingness of the evidence for their diagnostic statements In this connection it is salutary to read some of Rorschach's own cases, particularly the one in which he and Oberholzer carry on a dialogue, Rorschach interpreting responses to the ink blots, and Oberholzer presenting clinical data (21) Rorschach wrote his manual after studying only as many cases as we now consider necessary for training One wonders how he got to know so much so fast—clearly not by employing a research design such as is described above

A variation of this criterion-group approach which avoids some of these limitations is a recent Rorschach study of alcoholics by Buhler and Lefever (4) The criterion for classifying the primary group was relatively unambiguous, all of the patients drank intoxicating beverages This group was subdivided on the basis of other symptomatology into psychoneurotic, psychopathic and other types Non-alcoholic psychoneurotics, psychopaths, organics, and schizophrenics were also tested Signs differentiating among the groups were established. Then by an agile jumping back and forth from what is known of the psychopathology and personality dynamics of the contrast groups and what is known (with more or less certainty) about the meaning of Rorschach signs, the authors were able to describe some behavior dynamics of various types of alcoholics One finds one's knowledge of both alcoholism and the Rorschach enriched, and the kinds of things talked about have direct relevance for what is called a dynamic diagnosis. anxiety, tension tolerance, deep level conflicts, etc

Note that in this type of study, as in all those correlating test findings with clinical groups, one is forced to choose between learning about the patients and learning about the tests Either one infers from what is known about the test variables to variables describing the patients, or he infers from what is known about the patients to the meaning of the tests Occasionally both are attempted simultaneously, first a tug on one boot, then on the other One can establish only more or less plausible hypotheses by this method An illustrative study is that of Booth

Booth compared the Rorschach records of sixty patients with vascular disease (arterial hypertension) and an equal number with diseases affecting the locomotor apparatus (arthritis and Parkinsonism) (3) Following a suggestion made by Rorschach, he examined the content of the responses which the patients placed in the midline of the blots Two types were distinguished. First, there were those in which the content projected centered in the vertical axis and disregarded the dividing character of the midline Booth interpreted these responses as indicating a dominant impulse to action, cutting through external resistance, as the preferred mode of expression, Jung's introversion The locomotor group produced more of these responses In the second type of response the content projected was divided by the midline or suggested discontinuity between the two halves of the blot These responses, more characteristic of the vascular group, Booth interpreted to mean a dependence on the external, material, and social conditions of the environment as determinants of behavior; Jung's extraversion. Similar interpretations were made of the character of the movement responses, the animal responses, etc. Booth points out that the organ system affected by disease, peripheral or central, vascular or skeletal, is consistent with the kinds of concepts projected and suggests that a "form principle" related to the basic attitude toward life is revealed in the Rorschach and in disease These hypotheses are intriguing ones, and represent an unusually inventive use of projective materials.

Another type of study, more directly related to dynamic diagnosis and therapy, is that of Hertzman and Pearce on the meaning of human figure responses in the Rorschach (13) Twelve patients were followed in intensive therapy; the meaning of the human figures each patient had projected into the ink blots became identified through the way he behaved in therapy, his dreams, his descriptions of himself and others, etc The findings amplify Rorschach's theory that the human movement responses are direct projections and that they reflect what the patient feels about himself and his role In addition, the responses may suggest attitudes toward the world, characteristics of interpersonal relations, attitudes toward parents and kind of identification with them By comparing cases with many or few human figures the authors were able to make inferences about the need for repression, the acceptance of the self, the emergence of creativity with therapy, etc The Hertzman-Pearce study is in the tradition of Rorschach himself, the direct orientation to clinical data is characteristic.

The research cited so far has been oriented toward various kinds of clinical problems, and the aim has been simply to show the values and limitations of popular research designs Let us turn now to a single clinical problem, one which is posed directly by current trends in psychiatry, and cite some recent investigations which will demonstrate the value of psychodiagnostic methods The concept of *ego strength* is selected because it bulks so importantly in modern diagnostic fashions The ego came late into psychoanalysis, and has never been granted much autonomy, caught as it is between driving instincts, punishing moral standards, and frustrating external reality. We shall not attempt a definition of the ego Suffice it to say that its primary function is an integrative one, of mediating between perceptions of the outer world and inner impulse on the one hand and the executive functions of the personality on the other A catalogue of its part functions is impressive· it perceives, selects, allows, inhibits, organizes, blocks, takes in, retains, eliminates, judges, delays, anticipates, binds, discharges, denies, wards off—the list could be continued indefinitely—and it has at its disposal the mechanisms of defense. It performs these functions more or less adequately, hence the dimension of strength. In the struggle it may become blocked, impoverished, shattered, and so on. Clinicians, working with neurotics and psychotics, have always been impressed with its weakness, and only recently have the conditions for building a strong ego been studied (7). The importance of the concept in therapy may be suggested by the following: Fenichel, following Freud, states as a requirement for successful therapy "a reasonable ego (a) point which has the greatest practical importance and which is the most difficult to judge" (10). Alexander and French in considering indications for treatment, choice of therapeutic method, and prognosis give the "integrative function of the ego" first place (1). They propose to evaluate it by estimating the individual's adaptability to typical life situations. It is possible that with our occupational passion for quantification we can add some precision to this concept: what are its dimensions, and how can they be measured?

As a first approach the work of Ruth Munroe on the prediction of college success from the Rorschach is relevant (19). To facilitate a rapid summary of Rorschach protocols, Munroe constructed a check list of scoring categories, indicating the limits of the normal range for each. This was to be a guide for writing personality sketches of the subjects. However, she discovered, much to her surprise (because like most projectivists and clinicians she had been impressed with uniqueness and configurationism), that the total score on the check list was correlated with academic achievement. (This, it should be noted, is the disreputable "sign approach" to the Rorschach.) Apparently a simple summation of lacks or excesses of different kinds of Rorschach responses, each having a quite different interpretative significance, measures something meaningful about an individual and his handling of the real world—like adding up oranges, apples and pears and making sense of the sum, for example, how big is the orchard

Buhler and Lefever made a similar check list of Rorschach signs, more detailed than Munroe's (4) The frequency of each sign was obtained for a number of clinically diagnosed groups and a group of superior normals The signs which differentiated between the clinical groups and the normals were assigned weights proportional to the efficiency of the items Average scores on this key "corresponded rather closely to the relative seriousness of the personal and social maladjustment of these clinical groups"—normal, psychoneurotic, psychopathic, non-psychotic organics, psychotic organics and schizophrenics Even more importantly, four different normality keys, each derived from a comparison of the normals with a different clinical group, correlated an average of 91 Again we have evidence, as in the Munroe study, for a continuum which cuts through qualitative differences in psychopathology (different disease groups) and is related to the degree of personal and social maladjustment For the moment we may think of this as a continuum, three points on which might be identified as 1) staying out of the hands of a psychiatrist (normality), 2) being labelled a minor casualty suitable for psychotherapy (psychoneurosis), and, 3) being tagged with a name suggesting the probability of institutionalization, forced or otherwise (psychopathy or psychosis)

Next, let us view a convergence in the factor analytic studies of personality by Cattell (5) and by Eysenck (8), the former with normal subjects, the latter with neurotics Eysenck, using behavior ratings, self ratings, and objective tests, found a factor which he labelled general neuroticism Variables with high loadings in this factor included a previous history of abnormality, badly organized personality, dependency and unemployment, inferiority feelings, autonomic symptoms, low fluency of associations, perseveration, high frequency of odd associations (Rorschach), and low persistence * Cattell identifies this with his own factor, "Emotional Stability-Integration vs. General Emotionality," and talks about both in terms of "degree of dynamic distintegration" Is it possible that this is a continuum related to those found in the Munroe and Buhler-Lefever studies? Recent research in the Division of Psychiatry of the University of California Medical School suggests that this is the case

A factor analysis of the Minnesota Multiphasic Personality Inventory has revealed a very large first factor; all of the published scales of the Multiphasic (except K and L which were not studied) have significantly high loadings in this factor In naming the factor we have considered the following evidence The scales of the Multiphasic have been demonstrated by Hathaway, McKinley, Meehl and others to differentiate significantly between normals and the groups for which the scales were named and among clinically diagnosed psychoneurotics, psychopaths and psychotics (12) (17) Axtell, working with a population comparable to that on which the factor analysis was done, has confirmed these differentiations (2) Yet in this first factor, scales as dissimilar as Hypochondriasis, Psychopathic Deviate, Schizophrenia and Depression all have very similar loadings Also we have been able to demonstrate that the sum of the scores on three scales with high loadings in this factor and with only minimal loadings in the second, Schizophrenia, Psychopathic Deviate, and Depression, differentiates between patients responding well and poorly to the shock therapies Feldman, using methods similar

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* Cited from Cattel (6), original not available

to those of Hathaway and McKinley, has constructed a scale which successfully predicts outcome following the shock therapies (9) His scale has significantly high correlations with several of the Multiphasic scales, highest with Schizophrenia. In another study, Harris and Christiansen showed significant differences on the Schizophrenia, Psychopathic Deviate, Depression, Psychasthenia, and Hypomania scales between patients responding well and poorly to psychotherapy (11)

All of this accumlated evidence suggests that we should give a very general name to this factor We have a factor which 1) cuts across diagnostic categories, 2) separates normals from psychiatric patients, and, 3) arrays the latter in order of response to various kinds of therapy Tentatively we have named it a general abnormality factor, implying simply that the more of it one has, the greater the probability of psychiatric referral, hospitalization, and resistance to therapeutic intervention, even when the latter is as drastic as 50 insulin comas The end point in this series is, of course, an inaccessible psychosis For a number of reasons we prefer to think of it with the signs reversed—as a general normality factor—thinking of normality as something which is achieved, rather than as a state from which one falls away The similarity of this factor to those described by Cattell and Eysenck is pretty clear

And now after this long excursion, let me return to the original problem, the measurement of ego strength I think that with each of the continua described, we should get good agreement on the amount of ego strength in the groups defining the extreme points achieving vs non-achieving college students, normals vs schizophrenics, normals vs patients inaccessible to therapy. The rationale of this is not very complicated Psychological procedures are pieces of reality to which we ask patients to respond, and in spite of what we tell them about right and wrong answers, there *are* good and bad ways of handling the test materials This is as true of the Rorschach and the Thematic Apperception Test as of the Wechsler-Bellevue or any other test procedure Just as there are *demandnesses* in the situations of everyday living to which a normal person is sensitively aware and able to respond with a widely adaptive behavioral repertory, so there are in psychological tests Restrictions on the power of experiencing, weaknesses in testing reality, a narrowing of the range of adaptive solutions to problems, an inability to respond according to the expectancies of other people—these are test variables related to defective ego functioning A weak ego is vulnerable to both trauma and psychological tests

I hope I have demonstrated that a central concept in current psychiatry can be approached with psychodiagnostic methods But most psychodiagnostic testers will not be content to terminate their interpretations of test protocols with a statement, more or less quantified, about ego strength. They will search for other variables to talk about, but which ones? Rapaport has faced this problem, and in a recent paper with Menninger and Schafer he has stated quite clearly an orientation of considerable scope (18) The starting point is the Kraepelinian-Bleulerian question· what psychological functions are selectively impaired in different mental disorders? Taking note of the interest of dynamic psychiatry in ego-psychology and the defense mechanisms, the authors go on to formulate the rationale of diagnostic testing as follows. "certain patterns of defense mechanisms are adopted and these determine specific strengths and weaknesses in psychological functioning which then become characteristic of the adjustment of the personality, with the onset of maladjustment, an exaggeration or breakdown in these strengths and weaknesses characteristic for that maladjustment occurs which can be measured, this leads to a diagnostic differentiation "

With this rationale one cannot quarrel, because in actual practice it leads to meaningful descriptions of patients—particularly in the identification of psychotic trends which are not seen clinically until along in therapy the patient shows unexpected resistances, or perhaps becomes overtly psychotic The Menninger group have pointed out that diagnostic testing may expedite changes in nosology, and in fact they have already established a useful category—"overideational pre-schizophrenia." There can be no doubt that Kraepelin and Bleuler would have welcomed the Wechsler-Bellevue, the Goldstein-Vigotsky-Weigl types of tests, the Benjamin proverbs, certainly the Rorschach, and perhaps even the TAT, though I am doubtful about the latter And this reservation brings me to a critical point Clearly we can help Bleuler with his problem of identifying disturbances in perception, thinking, memory, orientation, reality testing and attention, and can specify with precision such things as asyndesis, condensation, figure-ground instability, concreteness, etc

But, note two things these terms are useful in describing the more serious forms of mental disorder, and they are useful in describing people as *biological,* not *social* animals The point at which man became a social animal for psychiatry is impossible to date, but a decisive insight came with the discovery of the "family romance"—the idea that in the interactions of mother, father and child are established patterns of behavior which persist throughout life Neurotic phenomena, the etiology of neurosis, and the treatment process can best be understood genetically and as aspects of interpersonal relations All the verbal rallying points in contemporary theory have a social reference—hostility, dependence, guilt, transference, rejection, etc Even the psychoses are coming within the fold, and there are well-considered assertions that the so-called primary symptoms of the psychoses, gross disturbances of thinking and affectivity, follow massive defeats in getting on with other people (15)

The implication for psychodiagnostic testing is obvious. the phenomena we are trying to understand are interpersonal, the variables we select to study should be those describing interactions between people We inquire why does a patient have an ulcer? The best established hypothesis about people who have ulcers is that they have dependency needs which are not satisfied either because of situational factors or because of other strivings which are incompatible with dependency So what do we do? We give him a series of ink blots and are pleased when he does something peculiar on Card VII, for example sees cookie dough or stomachs or denies seeing anything, because Card VII is supposed to provoke associations related to the maternal figure We conclude that he has a conflict in the area of dependency (22) That we can establish such a fact by this indirect method is of considerable theoretical interest, but it doesn't further our understanding of the patient very much Of course, what is meant by "understanding" can mean different things Here, we are referring to the satisfactory feeling of closure one gets from a well presented case history, a conviction that for this person with this kind of history and faced with this particular situation, it was inevitable that he should develop an ulcer—sort of like a Greek tragedy It is instructive to note how the clinician achieves this effect

He does it by presenting lots of first-order data· poignant quotations from the patient, detailed facts of the history, including typical situations and reactions, and a specification of the current circumstances Theoretical formulations may be quite minimal, but at the same time there emerges the impression of an underlying order, pattern, lawfulness in the material It is this underlying order which requires abstract description The question arises. is it possible to arrive at this description without eliciting the first-order data? Such description would seem to be the primary task of psychodiagnostic methods But here we run straight into the fact that the order and pattern underlying social interactions are hard to capture in verbal formulations Socially skillful people, including psychotherapists, have trouble explaining why they did what they did in a particular situation In our own research on psychotherapy, this has been a central problem, and we have been trying to define a language of social interaction —variables which describe the social effects of behavior and the cues which are responded to in social situations This is essentially the problem of molar behaviorism what is the patient really doing? So far we have been only moderately successful in translating the findings of conventional psychodiagnostic procedures into this other kind of language It seems quite possible that with direct observations of people in social situations we could do this more easily, for example with psychodrama, or with procedures like those used by the assessment staff of the Office of Strategic Services (20) There is a moral in the fact that when the OSS staff were asked to make judgments about people which *really* made a difference in the *real* world, they turned not to psychodiagnostic methods but to observations of the people in social interaction

This, then, is the problem as I see it We can keep on indefinitely refining diagnostic tools for identifying and measuring Bleuler-type variables But more important because more relevant to neurosis and normal personality is the identification of socially relevant variables. how a person relates himself to other people, his selective perception in social situations, his "intentions" (conscious and unconscious) in social interaction, his social techniques, and the end effects of his behavior on other people Such variables will not be easily come by, however such an approach avoids both the situation error, the notion that behavior is a function only of determinants outside the person, and the "organism error," the theory of fixed traits (Mackinnon) (16).

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III

NEUROPSYCHOLOGY*

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OF THE TEAMWORK of psychologists and psychiatrists we hear a great deal—both in its cooperative and its competitive aspects Much less is said about the teamwork of psychologists and neurologists, perhaps because such teams are rare and happily inconspicuous.

What is the psychologist's role in the neurological laboratory? First of all, psychological testing of patients with disease or injury of the nervous system may be considered as an adjunct to neurological diagnosis As a clinician, the psychologist's main task is to help the neurologist to distinguish individuals who have lesions of the nervous system from those who are free from such lesions, and to assess the extent of pychological impairment in patients whose nervous structures are defective

However, the psychologist may also look upon pathology with the eyes of a theorist, and with motives differing from those of the therapist and diagnostician. He may investigate the alterations in behavior after trauma or disease because he hopes to find the neural bases of all behavior, normal as well as abnormal. As an experimenter, he will ask the fundamental question how does living structure, especially neural structure, "mediate" psychological functions?

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Contributions in this field may come, and have come, from both clinicians and experimenters; the most advantageous constitution being that of the centaur, who combines the human head of the clinician with the horse trunk of the brass instrument psychologist. The experimental approach is indispensable if we wish to determine what psychological alterations (if any) are characteristic of destruction or dysfunction in given regions of the nervous system. From this point of view, it is more important to analyze numerous specific performances in an individual patient than to devise omnibus instruments purporting to detect "the" brain-injured patient as such

In fact, many of the current omnibus tests for brain damage such as the Shipley (60) and Hunt Minnesota (33), fail us even for mere purposes of screening (1, 2, 35) By contrast, the established diagnostic value of such general (non-specialized) instruments as the Rorschach or Wechsler-Bellevue Scale is due to the fact that they tap many different functions of the injured organism at the same time.

The diagnostic value of the Wechsler-Bellevue Scale, for instance, is based primarily on such subtests as digit-symbol, and block-design (the two items of the scale which discriminate most clearly between brain-injured patients and normal controls) It is thus possible to define certain psychometric "signs" of brain damage (69, 70), but from our point of view, to establish the presence or absence of these "signs" is only a first step on the way to an adequate analysis of the brain-injured patient's performance

We want to know, not only that patients as a group tend to fail on certain tasks, but how they fail and why Ability in block-design obviously may be limited by even slight traces of visuospatial agnosia, by motor difficulties, and by breakdown of any one among a host of hypothetical "higher" processes which have been tentatively called "visualization," "planning," "abstraction," and the like The point is that we do not know, in advance, what processes are involved in success or failure on such tests In fact, our work with the brain-injured subjects is primarily aimed at an identification of such unknown fundamental processes, and at the determination of the possible extent of regional localization of functions

The assumption of such localization, however, is not a foregone conclusion, it is a guiding hypothesis Its value lies in the suggestion of experiments which may lead to negative, as well as positive evidence The validity of any correlation between neural structure and function depends entirely "on the stringency of behavioral analysis" (37) and such behavioral analysis is made possible by the continued development of special tests and procedures (21, 22)

These methods need not be new in the sense of never having been used before. In most instances, they are merely new in their application to subjects with injured nervous systems Such methods include many of the standard psychological procedures which are gradually recognized as indispensable in the neurological laboratory *

To illustrate Recently, in work with 40 above-the-knee amputees, we noted that all but two showed a marked increase in their ability to discriminate two points on the skin of the stump (68, 36) K U. Smith, in examining van Wagenen's patients with sections of the corpus callosum, found an increase in simple reaction times which exceeded all other changes noted post-operatively in this series (61)

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* The ordinary neurological examination, in all its crudeness, consists mainly *of a series of abbreviated psychophysiological measurements*

The elementary nature of such measurements, and the difficulties of interpreting the differences that may appear between patients and controls, should not prevent us from applying these methods in all cases.

The amount of information that can be obtained by simple threshold determinations varies obviously with the location and severity of the lesion studied In dealing with trauma of cerebral structures—and to these we shall confine our discussion—we often find that the difficulties of testing and of interpreting test results increase roughly in postero-anterior sequence, from the occipital to the frontal lobes We shall begin therefore with a survey of recent tests of functions imputed to the occipital lobes, proceeding from there anteriorly to temporal, parietal and frontal lobes

OCCIPITAL LOBES

Flicker Perimetry

A comparatively recent development in the study of occipital lobe function is the use of flickering light During the last two years of the war, we combined ordinary perimetry with the use of flickering light. an electronically driven tube is mounted on a perimeter arc, and the fusion frequencies are determined in any desired area of the patient's field (65) Werner and Thuma (76), as well as Halstead (26), have used flickering light in the center of the field of vision. By placing the light into the periphery, reduction in fusion frequencies can be detected which would remain unnoticed, if one tests only the macular region Some patients, especially those with high parietal injuries, may fail to show any reduction in thresholds in the center of their field, but show a significant drop in the periphery of all quadrants (8, 10) Patients with direct involvement of suprageniculate visual structures often show homonymous losses in flicker discrimination in quadrants or even sectors of quadrants (65) Flicker perimetry is thus of advantage in making accurate determinations of partial visual impairment

Tests of Perception of Apparent Motion

In the same regions of the visual field in which fusion thresholds of flicker are reduced, there appear difficulties with the appreciation of apparent motion (9, 10, 66, 75) To test this, the familiar alternating bars which produce apparent motion effects are exposed on a rear-projection screen successively in different areas of the patient's field.

Double Simultaneous Stimulation

Areas of reduced function in the field of vision can sometimes be identified without recourse to flicker perimetry It may suffice to test such an area during simultaneous stimulation of another, less affected area On simple confrontation, the examiner may hold one hand into the patient's left half-field, the patient reports that he sees the hand As soon as the examiner brings the other hand into the patient's right half-field, the patient exclaims that the hand to the left has "vanished", he now reports only the one to the right Upon removal of this hand the one shown to the left becomes visible again (5, 7, 10, 77). This peculiar phenomenon is not limited to vision, but may occur on simultaneous tactile stimulation of the two sides of the body, and on bilateral auditory testing (3, 77) Bender has proposed the name "extinction" for this phenomenon in analogy to certain cortical effects, first described by McCulloch and Dusser de Barenne (46).

"Mixed Figures" Tests

Flickering light and simultaneous stimulation in different areas of the visual field can be applied, and are being applied, in cases of lesions within the occipital lobes as well as elsewhere in the brain This is also true of another group of visual tests which one might call "mixed figures" tests Suggestions for such tests can already be found in the writings of Poppelreuter (50) and of Gelb and Goldstein (17), but attempts at standardization are fairly recent.

In 1941, Werner and Strauss (74) developed a series of nine slides with black and white drawings of single objects, such as a hat, a knife, a milk bottle, etc Each picture is surrounded and covered by clearly structured linear patterns, such as zigzag lines running back and forth over the hat, or interlacing wavy lines covering the knife These pictures were exposed tachistoscopically for 1/5 second to Werner's group of brain-injured children and to control groups of normal and of "familial" mentally defective children Among the brain-injured a significantly greater number than among the controls reported the "background" *i.e.,* the wavy lines, zigzag lines, while entirely neglecting the "figures" (knife, hat) The test is obviously based on Goldstein's assumption that a general feature of the performances of brain-injured subjects is their difficulty in "holding a figure against a ground" (20)

A similar test based on suggestions of Poppelreuter's is now in use in this laboratory * Ten cards were prepared for tachistoscopic as well as time exposure, each bearing four to five superimposed or "mixed" figures, *e g.,* several kinds of eating utensils on one card, or furniture on another, cattle, buildings, etc. In use with adult patients the cards thus far seem to discriminate (on time exposure) between persons with and without visual object agnosia. The use of the cards on the tachistoscope is not far enough advanced to be described

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Reversible Figures

Difficulties with visual figure-ground relationships in the brain-injured have been investigated systematically by Harrower (28) with her modifications of the Rubin Vase Figures (53), and by Yacorzynski and Davis (78) who used the simple device of counting the number of reversals per minute reported by patients with frontal lobectomy while looking at a Necker Cube and similar figures with "reversible perspective." This reversible cube (Necker Cube) and the Schroeder Staircase are particularly useful in uncovering abnormalities of reversal rate among patient populations, but we have recently seen several patients with partial occipital, parietal or frontal lobectomies who did not show any significant abnormalities in this respect

THE TEMPORAL LOBES

Little is known about alterations in auditory function following brain injury. We still need extensive studies of the so-called "lower" auditory functions, such as thresholds of pitch and loudness in the brain-injured, in order to match the available information on the patients' visual thresholds

In an attempt to analyze disturbances of "higher" auditory functions, Werner and Bowers (72) have presented seventeen melodic patterns on the piano to brain-injured children, and found characteristic failures in vocal reproduction among the brain-injured More recently, G A Miller has prepared a set of phonograph records for this laboratory with ambiguous or "reversible" melodies, *i.e.* contrapuntal themes which can be structured by the listener in either of two ways (48) In analogy to Harrower's variations of the Rubin Vase Figures (28), the tonal patterns are systematically modified so as to make one or the other structure increasingly "compelling" This procedure might provide us with an indication of the difficulties with auditory figure-ground reversal in the brain-injured At the present stage, however, the test is too difficult for most patients One of the great obstacles to investigations in this field are the wide variations of premorbid musical ability among subjects

THE PARIETAL LOBES

Somato-Sensory Functions

The importance of simple sensory measurements in human patients with parietal lobe lesions, especially the anterior parietal lobes, has been demonstrated by Bender (3) He found "extinction" on simultaneous tactile stimulation of two sides of the body in many cases; moreover, he drew attention to the fluctuation of tactile thresholds in such patients and to the frequent occurrence of abnormally prolonged after-sensations following removal of the stimulus (4). These observations were made during the war on patients with penetrating parietal injuries They demonstrate that we are faced, often, not with a "loss" of specific functions but with a radical alteration in the mode of functioning (10, 12, 67).

Spatial Orientation

Disorders of the Body-Scheme

Lesions in the posterior parietal lobes and the occipito-parietal regions are said to disturb the individual's orientation with regard to his own body and to outer space Mild forms of the disturbances of the body-scheme are the finger-agnosias (a part of the so-called Gerstmann syndrome) (19) Strauss and Werner (62, 73) found a high incidence of finger-agnosia among their group of brain-injured children and suggest that this disturbance of the child's body image tends to be associated with retardation in the development of number concepts Studies on other samples, including brain-injured adults, are needed before this association can be established and its extent defined

Severe Disorganization of the "Body-Scheme"

In massive involvement of the body-scheme, as seen in patients who deny the presence of a limb or of one half of their body, we often see a concomitant inability to complete drawings of human figures in which the corresponding portions have been omitted (6) There may be characteristic difficulties in setting the hands of a clock ("clock test") (10, 29), there may be distortions and outright fragmentations in the free drawings supplied by these patients (11, 12, 49), and, in extreme forms, there may appear tendencies to neglect one-half of surrounding space (the dextro- and sinistro-tendencies studied by Kluver in operated monkeys) (38) Such patients always take right turns, or always left turns in searching for their room or their bed on the ward (11)

Visuo-Spatial Disorientation in Half-Fields and Quadrants

In some of these patients it is possible to demonstrate a persistent distortion of their visual space The patients point past fixed targets in constant directions (brought out by "pointing perimetry"), they make consistent errors in attempts at bisecting lines in different orientations in their field of vision ("bisection tests") (67); and they fail in their attempts to arrange three vertical threads in the fronto-parallel plane ("three-string experiment") (67). It is now established that "visual disorientation" of this sort may occur in homonymous half-fields (52, 15) and even quadrants of a field of vision (67) These patients act as if the "subjective coordinates" of their visual space had been altered (10)

The "Field of Search" Test

A tendency to neglect certain regions in one's surrounding space might be reflected in a difficulty of searching for objects in these areas To test this assumption, we constructed a series of "fields of search," *i.e.*, 48 test figures (colored capital letters, geometric figures) distributed irregularly over a square surface (64) * The test field is projected on a rear-projection screen, so that it subtends 60 by 60 degrees of the patient's field of vision In the center of the screen, and at the patient's eye level, duplicates of one of the surrounding 48 figures are projected, one at a time, by means of an additional projector The patient's task is to find as quickly as possible that figure in the field which is identical with the one in the center With this test there appear in some patients significant differences between the time spent on searching for test figures in one half or quadrant of the field and that spent on searching in other regions There are also cases of an over-all prolongation in searching-time The separate projection of the "sample" figure in the center permits the examiner to rotate the figure into any position and to study the influence of abnormal orientations of the sample on speed and accuracy of matching.

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* The procedure is adapted from Poppelreuter (50) The separate projection of the sample figure in the center of the field was suggested by G A Miller (47)

THE FRONTAL LOBES

When we started to work with the field of search test, we did not expect to find that the test would be particularly difficult for patients with frontal lobectomies Actually, it does present problems to some of these patients, problems which are just as difficult to understand as many other things about the frontal lobes Let us review briefly those current tests which have been claimed to discriminate most sharply between patients with frontal lobectomies and normal controls.

Comparison of Rylander's and Halstead's Batteries

From Rylander's battery (54, 55, 56), we can lift five tests which distinguish most clearly (in terms of t-values) between his thirty-two cases of frontal lobectomies and their individually matched controls 1) First (and most discriminating), a "figure-matching" test, after Buhler and Kulpe (16), 2) defining differences between "abstract" words; 3) Kraepelin's test of continued addition (39), 4) Goldstein's object sorting test (22, 23); and, 5) the intelligence quotient (Stanford-Binet)

In the figure-matching test, the subject is given a card (for three seconds) bearing a number of meaningless figures Although all figures are similar, one occurs twice, *i.e.,* it appears in identical form in two different positions on the sample card The subject is then asked to find this identical figure on a multiple choice card (identification), and to indicate, on a special diagram, the positions which the identical figures had occupied on the original sample card (localization) The test is scored, separately, for identification and localization, and it is the latter score which distinguishes most definitely between patients and controls

We described this test in detail because it seems to have surprising similarities with the most discriminating item in Halstead's battery (26), *viz.*, the "formboard-recall." (In this test, the patient is blindfolded, and is given three trials on a modified Seguin-Goddard formboard. Formboard and blindfold are then removed, and the patient has to draw the shapes of the blocks, as he recalls them, moreover, he has to indicate the positions which the different blocks occupied in the completed formboard)

Apparently both the figure-matching test used by Rylander, and the formboard recall in Halstead's battery involve some incidental learning One is tempted to say that they also require the patient to attend simultaneously to different aspects of one task; but whether this is actually the feature which makes the test so singularly difficult for the patients is impossible to say without further experimentation We need systematic variations of this type of test, before we can identify its crucial aspects *

In Halstead's battery (26) we find the following five "most discriminating" procedures listed here in the order of discriminating power attributed to them by Halstead 1) the formboard recall, already mentioned, 2) fusion frequency of visual flicker (central field); 3) category test (non-verbal);

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* One of the procedures to be used in this connection is the recently developed multiple-choice form (14) of Benton's visual retention test (13) Benton has already established that this form of the test is much more difficult for various groups of patients than the older drawing form (13) We are currently applying the visual retention test in both forms, together with the field of search, the mixed figures, the figure-matching tests, and the Porteus Mazes (which have been claimed to be particularly diagnostic in cases of frontal lobotomy, 51)

4) maximum rate of activation of a mechanical counter (with the extended index finger), and, 5) variability of fusion thresholds of visual flicker (the thresholds of patients with frontal lobectomies were found to be less variable than those of the normal controls)

As in Rylander's battery, we can note a peculiar combination of alterations in seemingly "simple" or "lower" functions (finger oscillation rate, flicker perception), and in apparently "higher" performances (formboard-recall, category and sorting tests, definitions)

The question will have to be asked whether the simultaneous involvement, after frontal lobectomy, of so-called "lower" and so-called "higher" functions indicates a concomitant derangement of several different underlying processes, or whether the available results should prompt us to drop the entire dichotomy of "higher" and "lower" functions as not based on neurological fact I would rather stress the second possibility—that the whole distinction may be artificial, and that we have to leave it up to the organism to tell us where the dividing lines between basic processes should be drawn

Sorting Tests and Their Modifications

Efforts at defining test situations which are uniquely difficult for patients with frontal lobe damage have centered about the tests of sorting and categorizing, developed by Goldstein and his students (22, 23) Patients with frontal lobe damage tend to group less objects than normal controls in most sorting situations;* but the significance of different types of groups made by the patients is less clear Considerable efforts have to be spent on the comparative study of the verbal forms of such tests (22, 23, 25, 27, 71), and the non-verbal forms (which have certain advantages) (26) Obviously, all claims regarding defects in "abstraction" have to be specified in terms of the material to be abstracted by the patient, or the "relata" in Kluver's terminology (37)

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* In Werner's group of brain-injured children, the reverse was true (63)

A still unpublished study of Scheerer's (58) should be noted in this connection By adding a series of increasingly different shapes to the Weigl figures, Scheerer attempts to determine at what point "similarity" breaks down for the patient as compared with the normal He finds, in keeping with certain predictions of Goldstein's, that the patients reject slight variations in shape, as if these changes destroyed for them an essential similarity (which the normal subjects continue to perceive)

Careful analysis of performance (23, 57) is necessary in order to determine why a sorting task is difficult for the patient The patient may fail because he is unable to react appropriately to the kind of logical relation involved in the task, or because of the complexity of the perceptual situation * Moreover, performance may be altered because the

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* Lashley has distinguished "perceptual difficulty" from "logical difficulty" in describing the performance of rats in tasks of discriminating visual patterns (40) His rats were never able to choose consistently "that figure (any figure) of three which was different from the other two" *e g*, a triangle against two circles, then a square as against two oblongs, etc Such "generalizations of the second order" seemed to be clearly unattainable for the rat On the other hand, the rats were always able to "abstract" triangularity *per se* (18), *i e*, they learned to choose a triangle as against other shapes, regardless of size, orientation, or color of the triangle Thus the rat could make a generalization involving the abstraction of a common perceptual element such as "triangularity", yet the same rats, Lashley asserts, would never be able to abstract the identical elements in Hull's Chinese ideographs (32), not because the latter task is logically different from that involved in reactions to triangularity, but because it is perceptually more "complex" Unfortunately, we have no definition of "perceptual complexity" beyond that of higher time and error scores in the learning of the task In man, tasks involving perceptual complexity may be

task involves repeated reversals of implicit or explicit instructions (repeated "shifting in principles of sorting")

Inability to keep track of repeated reversals of instructions has been noted by Settlage, Zable and Harlow (59) in monkeys who had sustained bilateral removals of "pre-frontal" areas The animals had to detect food hidden under one of two differently shaped objects The position of the objects was interchanged at random For a number of trials reactions to shape were rewarded (regardless of position) Then the experimenter rewarded reactions to position (*e.g.*, to the object on the right), regardless of shape This was continued for another series of trials until the experimenter again reversed the situation. The monkey's task was at any time to find out, as rapidly as possible, "which test was current" The pre-frontal monkeys showed excessive perseveration of previously appropriate solutions throughout the reversals in testing conditions One should note that the operated animals did not differ from their controls in their ability to acquire discriminatory reactions, they failed only when forced to "shift" from one type of discrimination to another For work with patients, the University of Wisconsin Card-Sorting Test (24) is designed to maximize such difficulties in "shifting" and to permit quantitative scoring.

Before leaving the frontal lobes, we should remind ourselves of the controversy surrounding the so-called "negative" cases—those patients who fail to show characteristic deficits after surgery or trauma (30, 31) As far as we can tell, the "best" of these negative cases are those of psychotic patients, tested before and after lobotomy or topectomy It

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solved via "second order generalizations" The validity of Lashley's tentative distinction between logical and perceptual difficulty is therefore a problem which should be subjected to continued experimental tests seems as though the psychotic's brain is more tolerant of frontal lobe ablations than is the brain of the normal or the so-called neurotic The careful study by Malmo (44, 45) on eight normals and neurotics shows small but significant reductions in functioning after frontal lobotomy and gyrectomy

INTERPRETATIONS

In summary, we can say that there are enough specialized tests available to attack the problem of regional localization of psychological functions This does not mean that any regional localization has been definitely established, beyond the well-known importance of the striate cortex for vision, or of the sensory and motor areas for their corresponding functions We should stress once more that our subdividing of tests according to various cerebral lobes was merely a matter of exposition Whenever a test turns out to be sensitive in the case of a lesion involving a particular area of the brain, we should apply this same test in other cases regardless of the presumptive locus of the lesion As a guiding hypothesis, the assumption of regional specificity is defensible, as long as it leads to proof or disproof of any given localization The same is true for the assumption of basic psychological functions or factors

Factorial theories at this stage should be used only as a frame of reference for the design of new tests and experiments In this respect, multiple-factor hypotheses are not necessarily preferable to an equally tentative, heuristic formulation of a general factor—the assumption of a fundamental disturbance (or "Grundstorung" as Goldstein called it) which appears with different specifications in each cerebral region (20)

In fact, the assumption of a fundamental disturbance may have definite advantages at the present state of knowledge It concentrates the investigator's attention on similarities of dysfunction in seemingly disparate areas of the patients' performance The discovery of "frontal lobe signs" in cases of occipital lobe lesions (17, 42) may not be as paradoxical as it seems *

One could look upon the "most diagnostic" tests which we have enumerated from this point of view. We have stressed certain features which seem to make these tests particularly difficult for the patients Let us try to name them·

The patients may have difficulties when the test stimuli are very brief (as in tachistoscopy) or abnormally prolonged (as in protracted tactile stimulation) They may show special difficulties when the stimuli are brief, but rapidly repeated—as in tests involving flickering light Their performance may break down when they have to react to multiple simultaneous stimuli—as on double simultaneous exposure of patterns in their field of vision, or on tasks involving simultaneous learning of two or more aspects of a situation (*e.g* , in the figure-matching tests, or the formboard recall) The patients may give abnormal responses in reaction to "embedded" stimulus patterns, as in the mixed figure tests, the field of search, or drawings with reversible perspective Finally, the patients may fail on tasks calling for repeated reversals of implicit or explicit instructions, or for sequences of different responses to identical or similar stimuli Such failure may influence performance in grouping and sorting tests; it might play a role in the familiar working curves of

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* In the monkey, inability for "delayed response" has been considered a characteristic sequel of bifrontal ablations (34, 43) Lashley recently ablated prestriate cortex from both occipital lobes in five spider monkeys, four of the five animals lost their capacity for "delayed response" (42)

Kraepelin (39) It is in this area that the recent animal experiments of Harlow, Settlage and co-workers (59) should be applied to human subjects, especially to those with frontal lobectomy

The half dozen aspects of current tests just enumerated are not "factors" or basic functions which could be jointly or severally impaired by cerebral damage They are merely areas in which further development of testing procedures would seem to be especially promising Nor is this list exhaustive—we have not touched upon the entire problem of memory, the aphasias and agnosias However, interpretation will come after the testing The coalescence of psychology and neurology (41) is not an achievement, but a goal

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IV

THE APPLICATION OF DIAGNOSTIC PSYCHOLOGICAL METHODS TO COUNSELING AND PSYCHOTHERAPY

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PSYCHOLOGY as a science has achieved a certain degree of adult sophistication Psychology as a clinical instrument is still at the stage of infant exploration It is not by accident that psychologists entered the clinical field, and became members of the "clinical team," as diagnosticians Since the roots of psychology have been deeply embedded in experimental science, it is logical that its entrance into the applied field should have been in the area of measurement As a consequence the bulk of applied psychological work has been in the important, although limited, area of developing, refining, and applying diagnostic testing instruments

More recently, however, large groups of psychologists have become interested in the field of counseling and psychotherapy. It is a rare journal concerned with clinical psychology that does not make some reference to either a theoretical discussion of psychotherapeutic principals or to an illustrative case demonstrating a particular psychotherapeutic technique Therapists advocating various systems of psychotherapy have claimed excellent results in their treatment procedures, yet it has only been in the last very few years that investigators have even become interested in objectively evaluating their results, and the number of well-controlled scientific studies approaching this problem is few We have used the excuses of being too busy with the great public demand for services, of claiming therapy as an art which cannot be scientifically scrutinized, of lacking adequate tools to carry out objective research, and many others Until we conscientiously make an attempt consistently and scientifically to scrutinize our data, this area of clinical psychology will remain at the level of infant exploration

The answer to the problem, perhaps, lies in doing away with the unrealistic dichotomy between science on the one hand, and clinical art on the other Scientific research cannot be divorced from clinical practice and constant objective evaluation of clinical procedures must develop concomitantly with clinical practices. The rigid training of psychologists in research techniques, procedures, and disciplines makes him a logical person to develop in the area of scientific research of clinical procedures No longer can we tolerate a divergence between experimental and clinical psychology We must continually develop in the direction of experimental clinical psychology

It is the purpose of this paper to demonstrate how one type of clinical tool—psychometric techniques—can be, and is being, applied to make counseling and psychotherapy a better understood area of clinical practice through rigid experimental evaluation I will attempt to describe certain problem areas which demand objective research, to point out what experimental work has been done thus far in these areas, and to suggest further approaches to the problem.

TREATABILITY OF PATIENTS

We all recognize that every form of psychotherapy succeeds in helping some patients, and that no type of psychotherapy succeeds in helping all patients Furthermore, psychotherapy is expensive and competent therapists are limited in number Although it is the conviction of the writer that normally tests should not be used for purposes of screening, certain clinical situations may make such a procedure necessary. Furthermore, since no therapeutic technique seems to help all patients, experimentation is needed to ascertain what types of patients are more consistently helped, whether there is consistency of results in the type of personality dealt with, and whether there are any general or specific criteria for determining the predictability of success

Numerous studies have demonstrated the feasibility of using psychometric instruments in determining the treatability of clients Kriegman and Hilgard (26) found that children 10 years of age or less and with IQ's of 110 or above showed the greatest therapeutic success. By the use of the Rorschach, Bradway (4) developed a group of factors which seemed to be related to the treatability of promiscuous girls, Harris and Christiansen (19) discovered certain factors which are conducive to success in brief psychotherapy using the Minnesota Multiphasic Personality Inventory and the Rorschach, and Siegel (40) found certain Rorschach signs that are aids in forecasting response to treatment in children The Rorschach has also been used to predict the success of various treatment procedures with psychotic patients, as demonstrated by Piotrowski's (32) study of the prediction of improvement resulting from insulin therapy in 53 out of 60 cases, Halpern's (17) signs which differentiated groups who would respond poorly or adequately to shock treatment in 14 of 17 cases, and Morris's (29) prediction of treatability at an accuracy rate of 73% for metrazol treatment

Other studies have attempted to determine treatability by studying successful and unsuccessful clients over a period of years Glatzer (14) has indicated that rejecting, deeply neurotic, psychopathic or psychotic women are poor group therapy risks. If these criteria are found to be consistently true, the use of psychometric instruments—which are notably successful in differential diagnosis—to select potentially treatable clients is obvious

For each particular therapeutic approach, there needs to be keen understanding of the dynamics of the process and the particular type of client which is most helped by particular treatment procedures It may be that such an understanding, developed through experimental procedures, may produce economy of effort and an increase in the predicability of success of psychotherapy If we are no more successful with various psychotherapeutic procedures in the future than we have been in the past and if the demand for psychotherapeutic services continues at an insatiable rate, then we may be forced into the position of determining some criteria for predicability of success in therapy

SUCCESS OF THERAPY

The successful results of psychotherapy have been claimed by many individuals using various psychotherapeutic techniques At the same time there has been a consistent lack of objectivity on the part of most therapists in evaluating the results of their therapy This may, in part, be due to our genuine lack of agreement or understanding of what a psychological recovery or cure is, but perhaps a more cogent factor is the lack of know-how and the lack of willingness to objectively evaluate therapeutic results One of the greatest needs of contemporary psychotherapy is a consistent research program to verify or villify our therapeutic methods and techniques, for without validation of the success of our procedures, we know not if psychotherapy, in general, and certain systems of psychotherapy in particular, are worth the time and the effort expended

Some limited studies have been conducted in the direction of evaluating particular therapeutic procedures I will mention several in which psychological tests have been of primary importance in the experimental design Rashkis and Shaskin (35) used the Minnesota Multiphasic Personality Inventory with 22 psychiatric battle casualties before and after permissive group psychotherapy and found definite reductions in depression, hysteria, paranoia and psychasthenia; fewer reductions in hypochondriasis, masculinity-femininity, and schizophrenia; no reduction in deviant psychopathic scores, and a slight increase in hypomania reactions. Klopfer (24) using the group Rorschach with nine soldier patients before and after three weeks of group therapy demonstrated how the group Rorschach could be used in evaluating therapy programs and in selecting patients who could derive maximal help from therapy Muench (30) using 22 "signs" on the Rorschach, the Kent Rosanoff Free Association Test, and the Bell Adjustment Inventory as pre- and end-tests, showed the effectiveness of individual non-directive therapy with twelve cases, and then compared the objective test results with independent therapists' evaluations

Other tests and diagnostic instruments have been used: Kobler (25) with the Shipley Hartford Retreat Scale and the Cornell Selectee Index found that 40% of 341 patients in an

Army Convalescent hospital felt better due to group psychotherapy and 67% from individual therapy, Combs (8) with one case and Cowan (9) with twenty cases showed significant improvement in Bernreuter Personality Scales applied before and after non-directive therapy, and Fleming (13) administered the Rogers Test of Personality Adjustment, a Guess-Who questionnaire and a Sociometric test to seven children before and after permissive group therapy, and showed that the girls showed genuine improvement in all three tests, but the boys showed little improvement

These studies are merely the beginnings of much needed research in evaluating psychotherapeutic results They may also help answer other perplexing questions, such as who should conduct psychotherapy? If we find, as did Rashkis and Shaskin (36), that psychologists are at least as effective psychotherapists as other professional groups, that objective evidence should go a long way in answering the question concerning who is qualified to be a psychotherapist As we clarify our criteria for success in therapy, standardize our therapy populations by ascertaining their capacity for improvement upon entering therapeutic relationships, equate changes in the therapy groups with comparable control groups, and investigate further changes by periodic follow-up studies we should begin to understand the efficacy of our treatment procedures

PROCESS OF THERAPY

Just as it is important to understand the degree to which therapy is successful, so is it important—perhaps even more important—to understand the dynamic therapeutic process as it proceeds In Fleming's (13) study the girls made more progress in therapy than the boys, Rashkis' (36) study showed an increase in hypomania reactions after therapy, and Muench's

(30) study demonstrated that despite ample evidence of clinical improvement some clients showed poorer adjustment scores on the Bell Adjustment Inventory. Such questions as these can't help but stimulate our clinical thinking and motivate our research procedures in the direction of a more adequate understanding of the dynamic development of the psychotherapeutic process.

Psychological tests cannot tell the whole story of the therapeutic process as it evolves, but psychometric instruments may be important adjuncts helping us to understand what happens in the therapeutic process. Wiener and Phillips (45) administered the Minnesota Multiphasic Personality Inventory, before therapy, every two months during therapy, and after therapy. The results of the tests were correlated with the clients' accounts of the therapeutic process and their subjective feelings. There seemed to be some agreement in the alleviation of superficial symptoms, major factors of anxiety, unresolved problems, and continuing sex conflicts. Siegel (40) used the Rorschach to help determine the status of cases during group therapy in order to help fix the point where the termination of treatment was advisable. Kasin (23) administered the Thematic Apperception Test before and after a series of non-directive counseling interviews, and then analyzed the counseling process by comparing the test data with the clients' description of their problems and attitudes as they were revealed during the counseling interviews. Preliminary results seem to indicate that the tests tended to reveal "deeper" material than did counseling, but counseling was more revelatory of overt behavior. However, the personality pictures obtained from the interviews and from the tests were not contradictory, but enhanced and clarified one another.

Carr (7) analyzed the pre- and post-Rorschach protocols of a group of counseling cases, and obtained judgments from an experienced Rorschach interpreter as to whether each individual had, during therapy, become worse, not changed significantly, improved slightly, or demonstrated outstanding improvement Such a technique might be quite applicable if applied to various stages of the therapeutic process

Tests may also be used from a somewhat different perspective, i e, tests may help to describe specifically what changes occurred in individuals during the therapy One suggestive study may be mentioned in this connection According to the 22 Rorschach signs which Muench (30) used in an evaluation of nondirective psychotherapy, he found the greatest changes after therapy were. a decrease in anxiety, a greater degree of personal integration; a greater tendency toward doing the expected thing, and a better integrated emotional life, including greater emotional stability, control and adaptability Our knowledge of what occurs in psychotherapy will increase as more studies are developed which get at the psychodynamic changes which occur during the therapeutic process

The problem of understanding what precisely occurs in the therapeutic process is a complicated one The answer to a significant beginning in the understanding of the process lies in developing verbatim recorded case material which can be internally analyzed by sifting the material into pertinent and reliable categories in getting and analyzing client reactions to the process as it evolves; and through objective psychometric data which may describe shifts, changes, plateaus, and regressions during the process It may be that other means will need to be used, such as motion pictures of the process in order to determine the effect of posture changes, analyses of client-therapist conversation and action before and after each interview, the effect of large offices and other elaborate prestige factors, the physiological changes occurring during the process, etc Research possibilities in the area of studying the process of therapy seem, at this time, to be almost unlimited To the extent that we understand what occurs in the therapeutic process will progress in the advancement of psychotherapy continue

COMPARATIVE EVALUATION OF THERAPEUTIC TECHNIQUES

If we can develop tools to understand the process and determine the success of therapy, we are obviously confronted with applying these techniques to a comparison of the various systems of psychotherapy Unfortunately, however, almost no work has been done in this area despite the fact that most therapists recognize the need Gump (16) made a statistical comparison of a phonographically recorded psychoanalysis with the methods of nondirective therapy as described by Snyder (43) The techniques of the analyst were significantly different from the nondirective therapist's in that he used more direct questions, interpretations and explanations, whereas the nondirective therapist used more clarification of feelings and simple acceptance Porter (34) demonstrated that nondirective counseling was distinctly and measurably different from a more traditional type of counseling with college students We recognize that differences in counseling and psychotherapy exist. We need to ascertain objectively what those differences are, and how they compare in terms of success, economy and long-range values

Attempts to understand and evaluate therapeutic differences make obvious another research area: that of attempting to discover those common elements of agreement inherent in all systems of therapy. Perhaps by such an approach we can really discover what brings about changes in individuals undergoing psychotherapy, so that the *real* variables bringing about the changes can be objectively, not speculatively, produced Certainly, therapy will always be dependent on the art or ingenuity of the individual therapist to some extent, but the crux of the matter lies in the direction of developing scientific research to evolve tested knowledge and tools that can be used concomitantly with the art of the therapist

TESTS AS THERAPEUTIC AGENTS

Many investigators have discovered that psychometric instruments, aside from their diagnostic value, may serve a therapeutic function. The Thematic Apperception Test has been found to be particularly useful for this purpose Deabler (10) found the TAT useful at the beginning of therapy as an "icebreaker," or at a "plateau" in therapy to circumvent resistances and defenses impeding progress Deabler prefers to use the instrument, not as a diagnostic tool, but to "mirror back" the client's significant feelings and attitudes enabling him to secure maximum expression, and making it possible for the client to arrive at his own insights Martinez (28) describes a more directive use of the instrument wherein the therapist works out a solution to the patient's problems from the verbalized conflicts disturbing the patient which are brought out through use of the test Jacques (21) demonstrates the usefulness of the TAT in increasing the therapeutic efficiency in a military hospital by uncovering basic conflicts and in the development of patient insight by use of the stories emanating from the pictures

Kammon (22) found the Rorschach one of the best therapeutic tools to "open up" the patient, to develop rapport, catharsis and insight, and as an indicator of suicidal tendencies Muench (30) contrary to his own theoretical bias, found the Rorschach and Kent Rosanoff Free Association Test facilitating the process of therapy through the development of rapport and by having available objective verification of subjective feelings and attitudes when requested by the client Stein (44) discovered that visual aids in the form of pictures proved valuable auxiliary techniques in group therapy by avoiding the semantic problem of the therapist in presenting complicated problems to the group, in aiding the client to make himself understood (*e g.,* "I feel like the man in picture 2"), in making the members of the group feel their difficulties were not so esoteric, and in making them more amenable to therapy Fantel and Schniedman (12) used the Make-a-Picture Story Test as plots for psychodrama, and found the MAPS test particularly useful because of its permissiveness and because it does not involve the patient directly Bordin (3), Bixler (2), and Rogers (37), although differing somewhat in the detailed approach, agree in independent articles that tests are useful in certain types of counseling if the client is allowed to choose what tests he will take, accept responsibility for formulating his own goals, and appraise the significance the test results have for himself

There seems to be no conclusive agreement as to the extent that psychological tests may be used effectively in psychotherapy, but most therapists agree that tests may be of definite positive value in the therapeutic situation

DEVELOPMENT OF NEW TYPES OF DIAGNOSTIC DEVICES

Just as psychological tests are useful in our understanding of psychotherapy, so may psychotherapy stimulate progress in the area of psychometrics One interesting development has emanated from a need in therapy to find instruments which adequately measure a process which is often difficult to measure with the usual arithmetic measuring devices Consequently, either by design or by chance, psychotherapy has stimulated attempts to develop new clinical tests Pepensky (32), for example, accidentally discovered that a particular picture on his wall was helpful to a client in bringing out some deep-seated feelings and attitudes. Similarly, Muench had a client who kept insisting that a particular picture was very depressing to her At a particular therapeutic hour this same client indicated that this picture seemed "happier and brighter," and it was found that this change in attitude toward the picture coincided with an attitudinal change in the client which resulted in her recovery Pepinsky has found that such *informal projective* methods as pictures on the wall, anagrams, free drawings, etc , aid the client in release of emotionally charged, pent-up feelings, and the counselor in probing without arousing resentment in the client, and allow the client to maintain the responsibility for analyzing and dealing with his problem

Hildreth (20) has used an original feeling-and-attitude scale applied at various intervals with some success with hospitalized naval patients; Porter (34) has developed a checklist to identify kinds of procedures used in counseling interviews; Angyl (1) found differences in schizophrenic patients which differentiated between hebephrenic and paranoid characteristics by use of tachisascopically exposed letter combinations; Rodnick and Shakow (38) used a reaction time test with irregular warning procedures in getting at quantitative degrees of disorder in schizophrenia; and Raimy (35) tried to objectively measure alterations in the client's concept of himself by analyzing 14 verbatim counseling cases and setting up clearly defined categories of positive, negative, and ambivalent self-references If we find that the most important change occurring in psychotherapy is the person's attitude toward himself, then instruments to measure these changes are essential Burwen (5), in an uncompleted study, redefined adjustment as a unique factor with each individual and attempted to evaluate this adjustment by the amount of conflict in the person Ten clinical psychologists developed two forms of a self-rating inventory of 68 items representing characteristic needs of individuals One form gets at the extent to which an individual possesses these characteristics and the other form, using the same items in reverse order, gets at the extent to which the individual desires these characteristics Burwen intends to measure the degree of change in discrepancy scores in an experimental group before and after therapy and a control group not having therapy

One of the most interesting new approaches in this area is the experimental approach of Rubin and Katz (39) with auroratone films, which are abstract color patterns in ever-changing crystal-like forms blending with one another. These colors and shapes have been used with six selections of slow, sedative, and mildly sad music (*e.g*, Bing Crosby singing "Home on the Range," "Ave Maria," "Going My Way," or organ solos of "The Lost Chord" and "I Dream of Jeannie"). There is also a background of a mildly suggestive natural setting (e g, western prairies may be a background for "Home on the Range,") although the abstract color pattern is the dominant perceptual characteristic Along with certain therapeutic results such as physical relaxation, weeping, catharsis, better accessability to psychotherapy, etc, the technique also suggests virgin areas for the development of objective measuring instruments of a different sort to understand different nosological groups and the therapeutic process

The needs of psychotherapy have posed new problems in measurement No longer will the ruler-like measuring instruments suffice Along with developing instruments to describe the specific aspects of the internal process of psychotherapy as it unfolds, we need new global instruments which can give an over-all configurational analysis of the process Perhaps the answer lies in some of the pioneer work here described, or it may be that entirely new approaches to evaluation are necessary. In any event, we recognize that the needs of psychotherapy have precipitated the unfolding of a whole new area of diagnostic testing and research

THE PERSONALITY OF THE THERAPIST

The limited work that has been done in the evaluation of psychotherapy has primarily been done in the objective evaluation of the personality of the client Since psychotherapy is an intimate interpersonal relationship of two personalities it would appear that an objective personality evaluation of the therapist would also be necessary if the process of therapy is to be understood Groves (15) expresses this idea as follows. "We have enjoyed looking with microscopic eye at the reactions of others, but now it might be well if we turned our psychologically slanted inquisitiveness upon ourselves" Eissler (11) points out that the limitations in psychotherapy with schizophrenics lies in the therapist's personality, as well as the disease itself, *i.e.,* in the therapist's ability to develop a dynamic situation through language, affective attitudes, conscious and unconscious responses, etc , in which the patient feels free to respond Yet, oddly enough, there has been no consistent effort by therapists to evaluate their own attitudes, feelings, and actions as they affect the therapy process

Although the studies in this area are appallingly limited, a few suggestive studies might point up a direction for further research Through his experience with group therapy, Slavson (42) has logically set up a list of qualifications and training for group therapists Chase (6) has attempted to measure vocational and personal adjustment and attitudes which would ensure the effective application of counseling procedures Thirty-four judges attempted to determine "helpful," "doubtful," and "harmful" practices of counselors Some practices judged "good" are. recognizing counsellee's expressed feelings and defining the problem in terms of counsellee responsibility, examples of "doubtful" procedures are. calling counsellee by his first name and expressing approval to remarks of the counsellee, and "harmful" practices are. becoming emotionally involved, shaming the counsellee and side-stepping the counsellee's expressed attitudes Although the criteria in these two studies have merit, we cannot afford to rely on logically deduced qualifications in lieu of criteria experimentally determined

Among more experimentally oriented studies, Hardy (18) has attempted to determine the relation of dominance in a counselor to his effective use of the nondirective techniques The degree of dominance was determined by presenting counselors with certain recorded counsellee statements to which they needed to respond by a battery of five tests getting at dominance The value of such a study does not lie so much in the results, which seemingly disproved the hypothesis that a dominant individual necessarily will be less adept in using nondirective techniques, as in the research approach which may lead to more highly controlled and conclusive studies Lumry (27) is interested in measuring the changes occurring in individuals being trained in nondirective procedures by use of the Rorschach, TAT, Rosenzweig P-F Test, Guilford-Martin Temperament Scale, and an original Situational Test. Peck (31), using the same psychometric instruments, is attempting to relate the test data administered before training with ratings of 15 counselors who were rated "low" or "high" by two or more training supervisors The results of these studies are not yet available, but the experimental designs form a basis for further research procedures in this important area.

In conclusion, seven different research areas have been presented wherein psychological tests have been applied to counseling and psychotherapy The suggested research fields by no means exhaust the possibilities, for many other areas are in need of adequate research studies, such as the effect of psychotherapy upon various psychosomatic conditions; the validation of testing instruments and clinical diagnosis through psychotherapy; the development of personality theory; the analysis of what therapeutic techniques are most applicable to particular problem cases; the consistent analysis of case "failures"; the effect of therapy on changing intelligence, and the application of psychotherapeutic principles to allied areas, such as education and group work

Clinical psychology is a comparatively new field Counseling and psychotherapy, as a part of that field of clinical psycology, are still in swaddling clothes During recent years we have been undergoing a rather intensive development toward the theoretical analyses of various approaches to psychotherapy; our most pressing contemporary need is objective research data to substantiate clinical and theoretical suppositions

Perhaps it is too early to expect any large-scale controlled studies where various therapeutic techniques are comparatively scrutinized, or where cooperative studies of various therapeutic viewpoints are experimentally analyzed; perhaps we are too busy defending our own particular theoretical position to do extensive objective research; perhaps we have not yet applied the principal of "acceptance" to our own profession, so that we fear the ridicule of our peers if comparative research studies demonstrate a need for us to reorient our stated therapeutic position However, until we do utilize the available tools to make such studies, we will have to struggle along with theoretical and speculative arguments dictating the progress of psychotherapy It has been the thesis of this paper that the progress of counseling and psychotherapy will be largely determined by the fruitfulness of our experimental research efforts, and to that end we have surveyed the current research in which diagnostic testing instruments have been applied to counseling and psychotherapy, and have made some suggestions toward research possibilities in the future.

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V

RECENT DEVELOPMENTS IN DIAGNOSTIC TESTING OF CHILDREN

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INTRODUCTION: For the purposes of this paper, recent contributions are reviewed under three major headings

1 Basic Concepts of Development and Personality
2. Non Projective Testing With Children
3 Projective Methods With Children

Recent is taken here as covering the period roughly from V-J Day to July, 1948

BASIC CONCEPTS OF DEVELOPMENT AND PERSONALITY

Integration of Developmental Concepts into Diagnostic Methods

A review of recent literature gives convincing evidence of increasing recognition that an understanding of the developmental process is essential for evaluating diagnostic instruments Particularly striking is increasing insight into developmental processes of *infancy* as seen by Spitz (57) and Goldfarb (15) These and related studies demonstrate the crucial significance for the young infant's normal development of affection and emotional stimulation by adults The absence of such an emotional climate, particularly between four months and eighteen months, results in profound apathy and retardation Kanner (20) and others have pointed to the remarkable resemblance of such states to cases of organic brain damage (hostility; unprovoked aggression without guilt, anxiety; restlessness, concept deficiency, superficiality of relationships)

A knowledge of the significance of such factors enables us to evaluate more intelligently early histories and early test data One of the underlying concepts in work like Spitz's and Goldfarb's is the notion of *developmental vulnerability,* familiar in embryology· the idea that there is a crucial need for appropriate stimulation at the appropriate time as well as a crucial sensitivity to the wrong stimulation at specific times This concept of timing (fruitfully employed a few years ago by Erik Erikson (9) to illuminate the psychoanalytic concepts of oral, anal and genital phases of development) appears to be helpful in understanding various pathologies, for it seems to explain many language and speech defects in terms of social deprivation in the last half of the second year when speech development is proceeding most rapidly, to take another possible instance from many it seems to help explain the fact that children who appear constitutionally similar and who are exposed to similarly damaging situations do not suffer to the same degree

Spitz's (56) suggestion of diacritic and coenesthetic divisions of the nervous system takes account of these phenomena as well as Kurt Goldstein's *catastrophic reactions* in terms of fundamental theory Perhaps the most promising area for fundamental research in personality lies in relating factors of temperament and personality to the functioning of the autonomic nervous system and its higher projections The work of Wenger (67) and Lacey (22) at the Fels Foundation appears to point instances of such fundamental approaches

Clarification of Concepts of Normality

Our understanding of pathology depends in part on a thorough understanding of the ramifications of normal behavior and personality Our knowledge of what to expect of a normal child has been extended considerably in recent years. Clinicians (*e.g.* Babcock) are insisting that our diagnostic procedures are deficient without a clear background of understanding of normal functioning Just as the Kinsey report is forcibly altering many of our concepts of sexual pathology by demonstrating the frequency of pathological behavior in normal groups, so must we broaden our knowledge of the startling range of behaviors and impulses that may be expected in normal children Numerous observational studies of normal pre-school and school age children help (4, 27, 69).

Of passing interest is Pennington's extension (34) of Wechsler's study of nail biting which shows that this "symptom" reaches a frequency of almost 44% at age 13, and declines to 27% at age 17 and 15% at age 25 among presumably normal male adults

Other normative contributions in the use of specific projective and non-projective methods are mentioned later

Clarification of Concepts of Disease Entities

Along with the better understanding of the normal, we are working towards clearer and more functional concepts of disturbances of personality This will be evident in later discussions of projective and non-projective materials Typical are the studies of Shakow, Rodnick and Lebeaux (51) which attempt to give a clear picture of the schizophrenic kind of psychological functioning We mention Kanner's

(21 etc) achievement in isolating the new nosological entity of early infantile autism which is so striking for its clarity of psychological description; and noteworthy too is the apparent relationship to an institution-like lack of affection from parents capable of little warmth

Personal Dynamics

It seems safe to speak of a real trend in recent literature towards a more and more general wish to grasp the personal dynamics of the individual patient, and toward the recognition that a personality picture of *that individual* is essential Moreover, for this purpose, it is agreed that we need to understand the underlying processes of personality and not merely test scores Basically, the very term *diagnostic testing* would seem to imply this. You will notice this emphasis on individual personality patterns in many of the specific contributions to methodology that I shall turn to shortly, as well as in some of the other contributions to this symposium At the Philadelphia round table (1946) Schafer (48) made explicit the need for the insight of the examiner to structure meaningfully the field of test data. Shafer pointed out that there are many diagnostically significant test behaviors, many processes of dealing with tests that are not readily quantifiable Rapaport (37) pointed in that direction in his remark that our chief clinical inadequacy is in rationale —that we must discover the "psychological why" of our empirical test indicators Perhaps the most eloquent plea for an understanding of underlying processes and discontent with mere scores is in Hunt's pithy and eloquent comment

> "The main contribution of the psychological test is that it offers an opportunity of sampling the subject's behavior in a standard situation

> " . the mathematical symbols into which this behavior can be translated are secondary instruments of convenience and should not be allowed to conceal the primary data, the actual behavior" (18).

You will observe that the problems of diagnosis here become virtually those of the dynamic interpretation of individual behavior This same point will be treated further in discussing the diagnostic aspects of current psychological testing

Relation of Diagnosis to Therapy

Let us touch now on one further theoretical point before turning to empirical findings We find explicit theoretical divergence among clinicians today regarding the relationship between diagnosis and therapy Probably to most clinical psychologists, diagnosis—at least a working diagnosis—is an essential prerequisite to successful therapy, either by the psychologist or by another member of the clinical team Recently this view has been challenged, particularly by nondirective therapists Rogers (40) remarks, "Diagnostic knowledge and skill are not necessary for good therapy" Patterson (33) says psychiatric diagnosis has little rational connection with choice of psychotherapy and takes the outspoken view that, "Since all maladjustment is similar in origin, diagnosis in terms of symptomatology or etiology or dynamics is not essential to therapy" Patterson is a spokesman for those who are content to discard the whole paraphernalia of the case history, diagnostic testing and differential diagnosis

There has been little direct discussion of this problem in connection with work with children Perhaps my view may be added that for most children optimum situational therapy in nursery school, etc, and in other kinds of therapeutic handling would not need to vary greatly for many kinds of disturbances. Yet it should be pointed out that it is often necessary to decide in a given case whether, for example, great permissiveness or the support of consistent rules would be more helpful If for no other reason, the very significant problems of *referral* and of *prognosis* demand some diagnostic insight This may not need to be in terms of a standard nosology but it should involve clear understanding of the underlying problems of the particular child Rogers, Kell and McNeil (41) suggest that this functional kind of diagnosis in terms of the psychological processes significant for the individual may be acceptable to all psychologists, including the undirectional ones!

DIAGNOSTIC ADVANCES IN NONPROJECTIVE TESTING METHODS

Diagnostic Use of Standard Tests

Other members of this symposium are directing some attention to the reports of quantitative and empirically obtained diagnostic patterns in the standard tests

The patterns that suggest organic damage appear to be on firmest footing In the work with children perhaps the most significant recent contribution is Sarason's (46, 47) studies of an intertest pattern of relationship between Kohs and Binet scores As applied to several groups of patients, the Kohs-below-Binet pattern seems to agree with the EEG in differentiating cortical pathology

Perhaps of greater significance than these quantitative patterns, at least potentially, is the qualitative analysis of test patterns Wells (66) has called attention to the recent increasing emphasis on the qualitative features of standard tests, such as Goldfarb's treatment of the block-design test, new uses of the Porteus mazes, etc L Murphy pointed out in Philadelphia a number of promising personality indicators within the Binet framework (*e.g.*, words-in-one-minute as a free association test, distortions in reading, memory and pictorial interpretation test items; and certain notable scatter patterns Thus Murphy suggests that better performance on the precisely defined tasks than on those requiring insight might show dependence on authority and tangible achievement, while the opposite relationship might express anxiety about social relations at the expense of routine learning ability) (28) Such leads need much further development Practicing clinicians constantly use such hypotheses and ideas in evaluating individual test data However, we need more explicit use of such hunches and careful research examinations of such apparently meaningful patterns of test responses Of like import is Hunt's (18) just complaint that our test manuals give little space to quality of test responses and their diagnostic significance Nor, as he points out, is there anything to prevent us from being explicit about the qualitative factors in extending our objective scoring systems to include such indicators Perhaps a possible example, among many, of an attempt in this direction is in the study by Rashkis and Welsh (38) of 12 Wechsler-Bellevue signs indicating anxiety Seven are varieties of what these authors call "temporary inefficiency"—failure on easy items followed by success on difficult ones—presumably produced by tension and emotional blocks The other five signs depend on noting specific aspects of verbalization and behavior during the course of testing

We may be on the threshold of a great new development in test construction We are approaching the point where our qualitative and quantitative differential indicators, along with our increased comprehension of the functional processes in psychopathology, will enable us to select appropriate test material at the outset. At present we are rather in the position of finding significant bits and threads in a rag-bag of functionally irrelevant testing tasks If I may quote Hunt once again, "We should rework our tests to obtain items which will yield diagnostically-rich, observable material as well as convenient numerical measures" (18) The storehouse of behaviors required in many of the projective methods may also be drawn on in setting the content of such new and diagnostically superior instruments With such a starting point the powerful statistical measures which have proven capable of teasing out functional relationships which were unsuspected on *a priori* grounds can better be put to work in the refinement and application of tests grounded in a rationale of normal and pathological behavior Perhaps it is not merely hopeful to say that we are at the beginning of such developments

New and Modified Test Procedures

For the clinician, one of the most challenging contributions in the field of intelligence testing of children is Hutt's (19) suggestion of "adaptive" testing with the Stanford-Binet We may agree with Hutt that the use of this method implies that the tester be not a mere psychometrician—perhaps it would be more polite to say technician—but a clinician capable of judgment and add that this is one of the virtues of the method Briefly, the procedure involves abandoning the standardized order of administration and beginning, instead, with a test item which the child is almost certain to pass, going on to a very difficult item Administration continues with alternate easy and difficult test items from approximately the level of the basal and ceiling ages and ending with items around the actual mental age of the child being tested The advantages in motivation, interest and avoidance of the customary terminal drum-fire of frustrations seem obvious Comparing sizeable groups, tested by both methods, Hutt found that changing the order in this manner does not jeopardize the standardized values of the tests, since there was no significant difference in the median IQ's of the two groups However, when the 24 extremely poorly-adjusted children tested by the usual method were matched with a similar group tested by the adaptive method, a reliable difference was found between their respective mean IQ's of 91 7 and 102 7. Perhaps this is a partial answer to the well-known clinical phenomenon of lowered IQ in children with emotional difficulties; it is also another welcome step away from the ritualistic thinking in our testing procedures

Everyone working in the field is aware of the shifts that have taken place in our dependence on various kinds of psychometric instruments Louttit and Brown (25) have conveniently summarized the change between 1935 and 1946 in the frequency with which various tests are employed Only the Stanford-Binet and the Stanford Achievement tests are among the leaders in both years The full fledged use of projective techniques is reflected in the current emphasis on the TAT and Rorschach, leading non-projective tests of intelligence not among the leaders in the earlier list are the Wechsler-Bellevue, Goodenough "Drawing of a Man," and the Arthur Performance Scale The increasing attention of psychologists to handicapped groups of various sorts is one of the factors responsible for great interest in the 1948 revisions of the Arthur Point Scale and the Leiter International Point Scale The recently developed Thurstone scales for young children promise to alter the clinical child psychologist's routine testing program (62)

Mention should also be made here of Doll's editing for American use of the Oseretsky Scale of Motor Performance (65) which should broaden the scope of our testing procedures It would, for example, be interesting to compare findings on the Oseretsky scale both with the Goodenough and with projective studies of graphic and other expressive movements

Evaluations of Standard Tests

There has been a number of studies evaluating the effectiveness of various well-known tests, especially their effectiveness with certain special groups Because much of this work lies beyond my field of specialization, I shall refer only to a few sample studies McHugh (26) for example, throws some doubt on the widely used Goodenough test in showing that mean Goodenough mental ages increase disproportionately immediately after entering kindergarten, McHugh finds also a correlation of only 41 between Binet and Goodenough mental ages at the kindergarten level The much-vexed question of pre-school IQ's is also examined by Bradway, who found that verbal and memory items were the ones most closely correlated to Stanford-Binet IQ's 10 years later Of course this may be in part a function of the increasing verbal emphasis in the Binet itself at the later age levels

At any rate, there seems to be general recognition of the great fluctuation and low predictive value of individual preschool tests What is more, so general is the recognition of the doubtful predictive accuracy of an *individual* test, even for older children, that we are much less likely nowadays to find clinicians passing out IQ's to parents to be worn like badges of honor or of shame. However, there are still a number of less cautious psychometricians and school testers (often not psychologists) who pass out this kind of unqualified datum far too freely and often produce in this way incalculable damage in the child's picture of himself or in his parents' appraisal of him As Escalona and Rapaport (10) rightly point out, such over-evaluation of intelligence status must be considered a misuse of the psychological testing procedure

DIAGNOSTIC ADVANCES IN PROJECTIVE TECHNIQUES

Need for Batteries of Projective Methods

In many clinical situations time sharply limits the number of procedures that can be employed, but there is increasing recognition that no projective technique is sure-fire for every individual For example, verbal poverty or the fear of a situation resembling a school test may sharply limit the child's apparent productivity and spontaneity as seen, say, in the TAT The same child may show unsuspected vitality and spontaneity when placed in a congenial, projective play situation We have recently observed this at Vassar (particularly with school aged children of lower socio-economic status and with IQ's under 100—whether normal or hard of hearing) While this variable sensitivity of the projective methods has long been recognized, many current studies emphasize the manner in which different projective techniques do not merely corroborate each other but supplement each other They do so first because the different methods approach different areas of personality and, second, because of their differential stimulating values for different children (*e.g.,* Epstein and Schwartz (8), Fantel and Shneidman (11) and many others).

For these reasons it is worth recommending that *play* techniques be used more widely in the clinic for diagnostic purposes, if we are to reap the full benefits of the projective approach There has been some tendency to relegate the play techniques to research and to therapy and to use the somewhat more easily managed verbal and picture tests for diagnosis Very often, entire dimensions of personality are thus left untouched Of course, it is only fair to add that entire new dimensions of clinical training are involved in the use of these methods

Standardization and the Development of Norms

Because of his adherence to the doctrine of the total personality the student of projective techniques is often in the embarrassing position of requiring total recall, total recording and, one might even say, total immersion of anyone using his methods. For direct clinical purposes this becomes extremely cumbersome, and from a number of directions we are receiving suggestions for the selective recording of saliently significant responses in the projective setting We shall refer in a moment to the Iowa studies of doll play. In other areas, Napoli (29), for instance, offers a finger painting record form on the basis of his earlier rather facile analysis of the diagnostic significance of adults' behavior in the finger painting situation Wolff has just published an expressive movement chart (68) for the evaluation of emotional trends in pre-school children He recommends a standard series of drawings and suggests criteria for evaluating the expressive qualities of release, inhibition, decisiveness, indecisiveness, etc He also suggests an approach for analyzing the projective symbolic content While no norms or samples are offered, the material is closely related to Wolff's published analysis (69).

The incomplete sentences technique, first systematized by Tendlar in 1930 (61), was put to use in war time by a number of psychologists (*e.g.* 42, 45, 53, 60) The technique is an extremely flexible one, readily adaptable to a variety of situations. It has been used at Vassar for a number of years by Langmuir (23) as a projective group method to tap basic attitudes of students planning to work with young children. (Such sentences as "I like children who . . ," "When I was a child I liked grown-ups who . . " or "I wish that my parents had realized that ".) Rohde and Hildreth (43) have gone furthest with standardization of this method on a group of almost 700 9th grade children. It would be of interest to extend this easily used device to younger age levels It is both quick and appealing in administration.

The striking series of studies by Bach (2) and by other students of Sears (3, 35, 50, etc) represents an attempt to systematize the situational variables of projective doll play The studies serve as a beginning of systematic experimental variation of such factors as the experimenter's role, type of material, duration of play sessions, age, sex, etc In a sense, these studies may be thought of as bringing to the projective play techniques "instrument flying" instead of dependence on the clinician's equivalent of "flying by the seat of the pants " Thus, most of us have learned in practice that the optimum length of the play session for most preschool children is something well under a half an hour or that we cannot intervene too directly in most children's play But Sears and his students are establishing these and other attributes of the play session experimentally and statistically Sears points out that this is merely "necessary bush clearing and hump leveling" However, the Iowa studies have given us some normative data which, from our point of concern for diagnostic methods, is very useful background For example, these studies point to a consistent patterning of boys' as compared with girls' behavior even at the preschool level Although this was suggested earlier by Murphy and others working with projective techniques, by careful observers of nursery school and school behavior, and by such sociological analyses as those of Davis and Havighurst, the Iowa studies again provide solid confirmation of the suspected greater tendency for girls to accept social pressure docilely and for boys to be more rebellious, more variable, and more aggressive in their behavior

Attention should also be called to the shortened observation procedures developed at Iowa—very useful where the significant behaviors wanted in the record can be predetermined However, particularly for diagnostic purposes, the degree of structuring of the doll play situation rightly employed at Iowa when specific variables are being studied in relative isolation, may not be clinically desirable Bach comments that for his purposes "merely gaining insight" into the behavior and attitudes of a given individual is not very useful; for the clinical psychologist this may be the all-essential task Again, the clinician may not wish to "forego the spontaneity of fantasy productions" or "reduce their variability" (2)

Amen (6) has collected further normative material in the use of her projective technique for the study of anxiety In this the subject selects a happy or unhappy face to complete pictures in which a child is being scolded, picking up toys, walking with parents, etc. Particularly interesting are the changes noted with age: an increase in so-called anxiety both in child-adult relations and in routine situations and a decrease in child-child situations. There are certain semantic objections, however, in that areas of activity in which the child selects an unhappy face in a forced choice may have little relationship to areas of anxiety in the clinical sense. The theoretical relationship between unhappiness and anxiety needs to be more closely examined; experimentally it would be interesting to add more faces from which the child could choose: at least a neutral face and one defined to the child as worried or afraid. At best, however, Amen's material seems somewhat closer to rational tensions than to irrational and often "unattached" anxieties.

Development of Art Techniques

There has been a striking growth of interest in the expressive and projective aspects of children's drawings and paintings. We have already referred to Wolff. Major contributions come from Waehner (49, 64), Naumburg (31, 32), Alschuler and Hattwick (1). There have also been studies by Napoli (30) (largely with adults), Elkisch (7), Hellersberg (17), and others. Particularly striking in this field is the emergent agreement on the significance of various aspects of *formal* analysis; *e.g.*, area used, whether expansive or compressed, smooth and flowing as against angular lines; intensity of pressure; vertical and horizontal lines, choice of color, etc. The time now appears ripe for a large-scale synthesis and resolution of the significance of the formal factors proposed and already partially validated. Some sign posts for the analysis of content and symbol are at hand, but here the clinical and intuitive skill—and the predilections and biases of the clinicians—still are most prominent. Perhaps, however, it is not necessary to remind such an audience as this that one of the special advantages of working with children—particularly, I would say, with children under nine or ten—is the disarming and often breath-taking directness with which their problems and feelings are "laid on the line" This applies not only to drawings (in which *e.g.*, the child looms three times the size of his parents or where the father is deprived of his arms) but to the play techniques and other projective situations This is not to deny the importance of careful validation studies, but it is necessary to point out that the problem is on a distinctly different level from the problem the psychologist faces with adolescents and adults, with their highly elaborated skills in evasion, concealment and self-deception.

Rorschach Developments

Further standardization in development of diagnostic criteria with the Rorschach continues at a slower pace with children than adults Siegel's study (54) shows the diagnostic power of the Rorschach with disturbed 10- to 17-year-old children in a child guidance clinic. A Rorschach given at the time psychiatric diagnosis was made produced discrepancies in ten of the 26 cases studied; at the time of the second Rorschach, a year or more later, only three discrepancies appeared (88 5% agreement) Siegel modestly omits making this point—or perhaps she is properly concerned with interprofessional relations—but according to my examination of her tables all seven changes of diagnosis were made by the psychiatrist and not by the Rorschach examiners It is interesting, too, to note that all three disagreements were in cases considered unimproved after therapy. As Dr Muench has already mentioned, Siegel develops a rather interesting set of eight factors associated with improvement and four associated with non-improvement These would be of considerable clinical usefulness if independently confirmed Doubtless, there are many clinics with carefully administered Rorschachs already on hand for patients who have shown varied degrees of success in therapy to make it possible to check these suggested factors in short order Incidentally, one of the most significant factors associated with subsequent improvements was the presence of refusals Siegel interprets this as a sign of anxiety sufficient to motivate a positive response to therapy However, she cautions that refusals reflecting emotional blocking should be distinguished from negativistic defiance

In some respects comparable to Siegel's study is the report by Garfield (14) of a group of adult patients in which 76% agreement was found between the Rorschach and final staff diagnosis

Also in the literature of recent years are many Rorschach studies dealing with highly specialized points not readily summarized here However, we should note the studies by Ford (12) and by Swift (58, 59) for their contributions to the normative groundwork and to the validation both of the Rorschach in general and of certain Rorschach scoring signs. By and large, there appears now to be general agreement that the Rorschach can be administered, usually, from the age of three upwards and that, with certain clear-cut scoring exceptions and modifications, the basic principles of Rorschach interpretations are applicable to young children

While Swift found fair reliability for specific scoring items, she points out that "the small number of responses, the low frequency within many categories, as well as the young child's familiar variability of attention . all militate against high reliability" One may add that these factors operate even more heavily against confident interpretation Hence many examiners prefer to analyze two or three consecutive records taken a few weeks or months apart When records are taken over longer period of time, Richards (39) points out that they reflect significant changes in the children's lives He, too, indicates that a series of records may give a much more accurate clinical picture and that "characteristics which might appear to be 'constitutional' or at least relatively stable on the basis of the single record may turn out to be highly variable when seen as part of a dynamically changing pattern."

Levy and Zubin (24) and some of their students are carrying on interesting experimental studies on Rorschach factors which in time should clarify problems of interpretation and diagnosis Working outside the Rorschach cards themselves, they are using specially constructed stimulus cards which emphasize independently certain of the Rorschach scoring categories; for example, a set of movement cards These studies are pointed to experimental verification of the hypotheses underlying Rorschach interpretation, and, it is hoped, to a clarification of these hypotheses to a point where a true rationale will at last be available for the Rorschach.

Obviously what is needed throughout our work—and not merely in the Rorschach—is a much stronger rationale and less dependence on easily overturned, empirically obtained fragments (which we call "signs") as our basic diagnostic resource Obviously, a rationale which is really adequate to the Rorschach would also be adequate to the art methods and to many aspects of projective play situations and is indispensable for sound clinical development.

New Projective Methods

During the period under review there have been presented a few new projective techniques for use with children Best developed is Rosenzweig's Children's Form, Picture-Frustration Study (44). While fairly narrow and specific in the slice that it takes out of the personality, it is a brilliant example of the fact that respect for projective subtleties and respect for sound experimental procedures need not be mutually exclusive Moreover, the method is unusual (and it is a painful commentary on the state of psychological thinking that this should be unusual) in that it constitutes a direct application of carefully developed theory. Its scoring and analysis follow directly from Rosenzweig's concept of the phenomena flowing from frustration (These, by the way, were very influential in the development of the late Eugene Lerner's brilliantly conceived but clinically neglected techniques for studying ego-blocking in young children) Rosenzweig's method is conceptually grounded and carries with it its own rationale, his standardization studies thus far appear to point also to its empirical establishment The test has now been standardized tentatively on some 600 records from children between the ages of four and 13 By way of incidental normative information, we may pass on Rosenzweig's finding that children as well as adults are predominantly "extra-punitive" and "ego-defensive" in their responses The P-F method is not only quantifiable but lends itself to a qualitative analysis of the child's responses to different picture situations (*e g ,* difference in response when the frustrator is a child rather than an adult)

Harris' (16) Bas-Relief Test should perhaps be considered a new technique Basically it is an extension to the tactual field of Rorschach-like stimuli for the study of the personality of blind patients in Rorschach-like terms The test has not yet been used widely and very little work with children has been reported There are many other examples of the extension of existing techniques to groups with special handicaps and to new age levels. For example, we are finding at Vassar that techniques such as Miniature Life Toys, Balloons, Sensory Toys, developed for the study of preschool children, are definitely acceptable to school age children and remarkably productive with them

Wolff's earlier mentioned Expressive Movement Chart includes a "Security Test" The subject selects as representing himself a line-drawing of a high-climbing or low-climbing child, high-swinging or low-swinging, dressing alone or with mother, etc As with Amen's test there is a theoretical semantic objection here which there has not yet been time to test empirically On *a priori* grounds it seems unsafe to judge a child's general emotional security to so large an extent on the basis of his stated confidence in situations involving physical daring or caution

Another recent projective device which has not yet been fully developed but appears quite promising is the Three-Dimensional-Apperception Test recently introduced by Twitchell-Allen (63) This technique does not offer specific "framed situations" like Lerner's or Rosenzweig's methods calculated to tap specific aspects of personality function Rather it resembles more the Miniature Life Toys or Thematic Apperception Test in deliberately setting out to be "all things to all people" Obviously, in this type of projective technique standardization is a much more elusive goal The materials now available in plastic consist of 26 essentially ambiguous forms The procedure consists of a series of dramatizations using the objects and of a naming test Because I am one of those who have felt that we need much more intensive study of existing projective methods more than we need new ones and since there has been virtually no publication of results with the Three Dimensional Test, perhaps I may be pardoned for "giving testimony" We have been particularly struck in using this method by its effectiveness in eliciting significant material from many children and adolescents who have been rather uncommunicative and reserved in their responses to other projective techniques This brings us back once more to the need for a battery of projective techniques While there are some subjects who will not produce anything uniquely illuminating with the Three Dimensional Test, there are others who respond more freely here than say in the TAT; and in some cases more freely than with the more structured play materials of Miniature Life Toys *

The same combination of manipulable (but here two di-

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* For example, one very reserved and uncommunicative 14 year old boy with an extremely dominating mother gave this as his first dramatization after studying the objects silently for almost 10 minutes (the numbers in parentheses refer to the objects used as coded by Allen) Well, this guy is supposed to be a caveman with his club (21) He went out in the woods mad because his wife was mad at him for not providing 'em with food So he grabbed his club and went stamping out of the cave and said he was going to get some food So he's out in the forest hunting for food for his wife and himself and he comes to this—supposed to be a snake (10) (apologetic laugh) He comes there—the snake meat's about the best thing around Then he spies these bones—a couple of skulls—big bones—human bones (24-25-26-27-28)—so he didn't stay around there long! He starts walking to the forest and looks for some food Comes to the edge of the lake and there he sees an octopus (16) He sees that floating around in the water so he goes in after that—the water is pretty shallow—he goes in after the octopus The octopus grabs him and holds him under water, he's just about to drown when his wife comes along His wife comes in and she throws a stone spear at the octopus and kills him All black ink rises and everything—and then she drags the caveman home by the hair (apologetic laugh) And then when he gets home he finds his wife's already found some food for them (laughs weakly) She found food from a dead bear in the woods and then he tells his wife since she found so much food she could provide him with it for the rest of his life—they live happily ever after (runs down weakly at the end)

mensional) materials serving as the basis for thematic productions is found in Schneidman's Make-A-Picture-Story (52), which has not yet been reported in use with children

CONCLUSIONS

By selection and differential emphasis, we have probably made sufficiently clear our conclusions—and biases—as to the kind of continuing research in personality development which will be most fruitful in meeting the problems of clinical diagnosis We should like to conclude by reiterating the importance of understanding normal developmental processes—and particularly normal emotional functioning—in their individual and their situational variations, to reiterate too the need for a basic understanding of personality processes, both normal and pathological, as a way of avoiding our persistant bogging down in the culs-de-sac of specific empirical signs for artificial disease entities We mostly need improved methods of training clinicians, methods of training which will make the clinician a skillful observer of behavior who is aware of the source of his "clinical intuitions" in the expressive details of the patient's behavior Perhaps it is my conviction that the use of films is of enormous potential value here; however the grant of scope and time does not permit elaboration of this here

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VI

TEST CONSTRUCTION AND METHODOLOGY

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THE PRECEDING chapters have dealt with a variety of clinical problems which demand for their solution tests and techniques which are, in many instances, not yet available. It is therefore appropriate that a chapter be devoted to methods of constructing and evaluating such tests.

Let me remind you at the outset that "of the making of tests there is no end and much methodology is a weariness of the flesh." The purpose of clinical tests is to save time in diagnosis and therapy. In addition, tests have certain long-range scientific and propedeutic values over and above the pragmatically urgent, clinical values. Scientifically, tests are needed to clarify and quantify clinical concepts and outcomes and to provide objective baselines for the evaluation of therapy. From the point of view of training, a graded series of tests can introduce the trainee gradually into the problem of classification, diagnosis and therapy. In view of the shortage of trained personnel, the time consuming personal interview techniques alone can not cope with the present need, and tests are necessary for supplementing trained clinicians.

The tests which are now available for individual clinical use fall into two categories. the intelligence tests and the projective and cognate tests. As far as intelligence tests go, there is less need for developing new techniques It is sufficient to clarify and make more practical the tools and methods already available, and notable work in this direction has already been accomplished by William Hunt (8) and his coworkers In the field of projective and cognate techniques there is a crying need for more direct methods If it proves to be impossible to develop such techniques and we are thrown back upon the personal interview or the cumbersome Rorschach or TAT approach, the progress of clinical psychology will be slowed up considerably

The non-intellectual factors which the projective techniques attempt to unravel may be regarded as belonging to the emotional, volitional and attitudinal areas of life Since much of present day therapy is concerned directly with these factors, psychologists may miss the boat completely if they do not provide tools for measuring these factors In a recent study of brain operated cases, woeful lack of tools in these areas—where most of the improvement took place—was a source of great embarrassment to psychological investigators

In an attempt to delimit the areas which are most in need of test construction, we may classify mental life roughly

TABLE I

Types of Mental Content in Relation to Awareness and Communicability

		Outwardly-reportable (communicability)	
		YES	NO
Inwardly-accessible (awareness)	YES	conscious content	ego-suppressed content
	NO	super-ego repression	Id

into four layers—the material which is both (1) inwardly accessible and outwardly reportable, (2) inwardly accessible but outwardly not reportable; (3) inwardly inaccessible but outwardly apparent, and finally, (4) neither inwardly accessible nor outwardly reportable

The first layer of inwardly-accessible and outwardly-reportable material contains the everyday facts about oneself, the capacities, recognized shortcomings, overt interests, and attitudes which are directly amenable to measurement by either capacity of attitude tests and questionnaires (Conscious Content.) The second layer of inwardly-accessible but not outwardly-reportable data includes day-dreams, secret wishes, weaknesses, humiliations, embarrassing situations which are not pleasant to reveal (ego-suppressed content).

The third level contains the data which, though inaccessible to the individual himself, is nevertheless apparent to the trained observer Among such data are included indirect signs and symbols of inner conflict such as tics, blushing, restlessness, arising from unacknowledged ambitions, strivings and other types of repressed material which would cause too much pain and anxiety if they were allowed to come into consciousness (super-ego repression) Finally mental content may exist which at the time of its occurrence is neither accessible to the individual himself nor reportable to others but is nevertheless present within the personality insofar as it is revealed by subsequent reports from therapists Among these are included such situations as defense mechanisms, emotional dependence of such a degree that the individual has no idea of its existence, and other phenomena for which no grounds for comparison and no framework for reporting are available, *e.g.,* delusions and hallucinations of which the patient may be unaware, experiences of early childhood which occurred before concepts permitting verbal retention existed, etc

Questionnaires can elicit information on the first level about the data which is both accessible and reportable There is no technique available now which can get at the last category of neither accessible nor reportable data, except perhaps psychoanalysis or hypnosis Since these techniques are rather expensive in time and energy and require considerable training, there is definitely a need for new methods which would yield information in a more economical fashion

The general name applied to the techniques that attempt to obtain information from the two remaining areas of mental life is projective techniques. To be successful, these techniques have to be constructed with a view to certain simple principles and requirements which have been described by various workers (18) The material utilized in any of these techniques has to be economical in both time and effort and should involve no bulky apparatus The relationship between the subject and the experimenter should be *more impersonal* than that which is required in *transference* or in such deep role-taking as is required in psychodrama The elicited behavior should be limited to one segment of activity so that a recording of the results becomes feasible and a reliable record of this behavior becomes available Furthermore, the situation should be one which is easily standardized so that results taken at different times with different patients by different examiners could be compared *directly and treated statistically*

The procedure utilized in these techniques should involve specific tasks which have a definitely prescribed beginning and an end For this reason fingerpainting and play techniques which do not have easily recognizable terminal indicators should not be utilized as projective techniques unless provision is made for the determination of a beginning and an end for the activity The required behavior on the part of the subject should be limited to a given modality, such as speech or motor responses, and the results should be readily recordable and lend themselves to objective scoring

The next question to be answered is· do the present day projective techniques meet the above criteria? A careful examination of the outstanding projective techniques fails to reveal a single one which may be rated as satisfying all of the essential criteria The Rorschach test, which is perhaps the most highly developed in this area, satisfies many of the above criteria It is economical in time, it is simple to administer, it involves only a tenuous impersonal relationship between subject and experimenter, it is limited to one segment of behavior and consists of a test situation which can be standardized and readily reproduced The task is specific and is limited to one modality, and a complete record of the task performance can be readily obtained. The area where this test falls short is in the objectivity of the scoring systems that have been provided and in the methods suggested for interpretations Beginning with Rorschach and Oberholzer and including the other contemporary Rorschach workers, there is general agreement that the scoring in the Rorschach test is intended to yield only symbols of the full-blooded response which are in no way intended to be scores in the same sense as intelligence test scores The other tests such as the TAT, the Word-Association test, Incomplete Sentence, Bender-Visual Motor Gestalt and

Sorting tests have not reached even the meager level of standardization which has already been achieved by the Rorschach. In recent years, attempts have been made to standardize and objectify each of these techniques, and it is notable that, within the past few months, methods for objective scoring of the Bender-Visual Gestalt test (2, 11), of the Word-Association test (21), and of several other techniques have been forthcoming What direction are these attempts at objectification taking?

There are at least two directions which may be traced in the objectification of these techniques First is the attempt to conserve the present tools and provide scales for quantifying and objectifying the clinically-useful methods of scoring now in vogue Second is the attempt to resolve the complex tests into their components, to the end that the simpler tasks could be scored more directly and more objectively. Let us first examine the first trend, namely that of providing more objective procedures for scoring the old techniques In general, the procedure here is to make a survey of all the dimensions which had been found useful by clinicians When such a survey is made of all the different types of scoring variables and qualitative evaluations which the Rorschach gives rise to, it is found that fifty to sixty different dimensions have been utilized at one time or another. The writer catalogued these dimensions of behavior and provided scales for their evaluations (21) These scales were anchored with examples for each step in the scale Whenever quantification was impossible simple categorization was utilized These scales have at once the double value of providing objective rating continua for each one of the Rorschach factors and have the second virtue that the work of scoring can be reduced to objective procedures involving no appeal to intuition. By providing such an objective framework for cataloguing and classifying Rorschach responses, the work of interpretation is not made less dependent on intuition, but this intuition can now play against a solid framework of objective facts rather than against a fragile, nebulus framework of clinically-scored Rorschach factors This does not remove the need for many years of experience and much exposure to Rorschach methodology, but it does provide both the clinician as well as the research worker with a series of scores on recognizable variables which can then be manipulated either atomistically or in a molar fashion in patterns to determine the type of personality which gave rise to the particular record

Similar scales have been provided for the evaluation of handwriting specimens (10) and for evaluating performance on the Bender-Visual-Motor Gestalt (2, 11) test An incidental advantage of such rating scales stems from the fact that they provide a framework for the intercorrelation of results obtained from various personality tests Most of these scaling devices are at the present time, however, research tools only, since to utilize them regularly in the clinic would involve many hours of scoring and evaluation In order to answer the everyday demands of the clinic a new type of attack on these tests had to be provided This attack consisted of reducing the complex stimuli of each of the major techniques into its components This can be illustrated best by the Rorschach test Many research workers have noted that the Rorschach cards have such complex stimulus value for most people that any attempt at relating the response to the classic Rorschach determinants of color, form, chiaroscuro are very difficult since it is not always clear what particular element in the stimulus is related to the response. Furthermore, the task set for the subject in the Rorschach test is very vague and liable to many interpretations This is no doubt the basis for some of the weird Rorschach responses that normals sometimes give It is reported that one outstanding authority on the Rorschach after analyzing a record blindly, wrote as follows: "If this record is of a patient, my interpretation stands, but if a normal gave this record, forget it"

Any misunderstanding of the directions or any preconceived notion regarding the value of certain types of response may lead to a result which is totally inexplicable in terms of classic interpretation In order to avoid both the complexity of the stimulus material as well as the vagueness of the task an attempt has been made, following Rorschach's suggestion, to establish derivatives of the Rorschach which will attempt to measure the capacity of the individual to respond to the three basic physical determinants namely color, chiaroscuro, and the contours created by gradients in chiaroscuro or color In this way we can get the first order reaction to these stimuli before we begin to examine their interaction One measure which Rorschach utilized and which perhaps is his greatest contribution to perceptual phenomena is the movement response. There is yet no known physical correlate for inducing the perception of movement in a given static visual field even in people who are capable of perceiving movement in such stimuli In order to examine this type of response, a specific task involving directions for perceiving human beings in movement was evolved by David M Levy It consists of fingerpaintings which contain vague human figures The directions to the subject are simply that he will be shown some people in movement. Can he see them and tell what they are doing? This test has now been administered to several hundred people and it has already demonstrated its usefulness on two grounds First, of its own accord it differentiates normals, schizophrenics, neurotics and psychopathic personalities (14) In addition, it has proved useful in the study of personality changes after brain operations, and it has also been useful as a check on the Rorschach, especially in explaining the types of personalities which see movement on these movement blots but fail to see movement on the Rorschach test and vice-versa Brain operated cases that underwent the topectomy operation, especially those in whom area nine of the frontal lobe was removed, have shown that with the accompanying loss of anxiety an increase in the movement response occurs (14)

In further analyses of the stimulus characteristics of the Rorschach cards, it might be well to approach the question from the point of view of the factors in the cards which account for the particular contours of the percept, *i e.,* what combination of contrasting effects account for the particular figures that emerge in the percept? There are the following possibilities· contours have been regarded as due to a sudden change in brightness gradients, secondly, they may be produced by the juxtaposition of two contrasted colors, thirdly, they may be produced by black-white contrasts, that is, by uniform black against uniform white They may also emerge from gradients in saturation By providing special tests in which the contours are directly attributable to each of these particular means of creating the contour, we can study and vary experimentally each of these factors to note their influence on the emerging percept The movement blots have been made by producing contours that emerge from sudden chiaroscuro effects, that is sudden alteration in the gradient of brilliance In a similar fashion a "color cut-out" test has been prepared in which the contours emerge either from the juxtaposition of colors or from chiaroscuro effects within black or white areas or within the colors themselves Each one of these blots is rated according to the prevalence of contours and in accordance with the basic factors which produced the contours Thus far these tests are still in the experimental stage and only three of them have been prepared, namely the movement blots, the color cut-outs and the black-white contour cards. Each of them, however, does seem to yield interesting differentials between mental patients and normals as well as developmental gradients in children

One additional virtue of this material is that it is possible to utilize also the TAT approach in connection with these tests For example, after the movement blots have been administered and the responses taken, the examiner goes back to each blot and asks the individual to tell him a story about the people he had perceived in movement, that is, what happened before the particular scene that the subject envisaged, what was happening at the moment and what was the outcome likely to be These fantasy tests have the virtue of being completely based upon unstructured materials which may prove to be an advantage over and above the stimulus materials available in the TAT cards

Similar approaches have been reported in connection with the TAT test itself Thus, in addition to the provision of more objective scoring systems such as those provided by Rotter (13), Harrison (7), and Wyatt (20) for the standard TAT procedure, attempts are now being made to establish derivatives of the TAT which might provide more direct attacks on the variables involved A recent innovation by Shneidman (15) is to provide a series of 27 backgrounds into which one or more of 67 human figures may be inserted The backgrounds consist of the usual settings in which human beings are likely to be found or imagined. living rooms, bedrooms, dream clouds, bridges, forests, etc and the human figures offer a wide variety of choice—old people, young people, males, females, etc Since the subject thus constructs his own picture somewhat in the same way that the subject constructs his own world in the World Test of Bolgar and Buhler (4, 5), the story he creates about these settings may reveal more of his inner self than his response to a completely structured picture of the standard TAT type Another derived TAT technique is to place three pictures before the subject and ask the subject to arrange them in their proper, sensible order The situation is made somewhat ambiguous in that there are various ways of ordering the pictures but there are only a limited number of such ways since there are only three or four pictures usually in the set (16) Still another direct derivative of the TAT is the Rosenzweig Picture Frustration Test (12) in which the situation is pretty well structured and the response that the subject has to make is placed in a cartoon balloon revealing the degree of aggression, dominance or submission which characterize him in certain trying situations

A third approach to the problem of creating more objective and more specific tests is through tachistoscopic exposure This utilizes the well known principle that ambiguity and formlessness can be created even in a well defined visual form by shortening the exposure time Earlier studies have tried to study the visual perceptual process itself by tachistoscopic exposure But personality factors in visual perception may also reveal themselves in tachistoscopic studies The study of personality through tachistoscopically-exposed words has recently come to the fore (3) This derives directly from the well-known word-association technique In the usual word-association approach the response of the individual to the stimulus-word is the most important item to be studied, examined, and classified In contrast with this approach the new tachistoscopic method centers upon the stimulus-word rather than upon the response-word. It is the stimulus-word itself which sets off the complex-bound association, while the response-word itself may be simply incidental and is of value only insofar as it may reveal blocking, clang associations, or other aspects of behavior which are tell-tale of an emotional response to the stimulus word

Stimulus words which are selected either from the case history or from a general list of words which are expected to give rise to emotionally toned associations are presented tachistoscopically at very short exposure times (1/100th to ½ of a second) and the following objective measures are utilized in evaluation of the response First the exposure time required for correct recognition of the stimulus word is noted Secondly, the type of misrecognition that occurs in the pre-solution stage before the final correct recognition becomes available is noted Work of this type has been done by Bartlett (1) and more recently by Bruner and Postman (3) and it seems quite promising as a new type of approach to the understanding of the perceptual process in relation to personality A slight modification of this technique which makes it more amenable to utilization in the clinic with very sick patients is a method developed by Mary Alice White (17) which consists essentially of typing the stimulus-words through 13 carbons and each of the carbon copies beginning with the last is exposed in turn until they become sufficiently clear for the patient to recognize them correctly In this way, the tachistoscopic procedure is avoided and much of the virtue of the previous methods is still retained Similar procedures can be utilized with non-verbal materials, such as pictorial materials or perhaps even auditory stimuli It should be pointed out that the method is not new and that it has been used previously in the laboratory, but the stress was previously on the sensory aspects rather than on the perceptual aspects; that is, the experimenter was concerned more with the stimulus than with the responder

There is, of course, a danger of crystallizing the present day techniques too soon Perhaps we do not have enough knowledge on hand to systematize and experimentally verify many of the hunches and clinical intuitions that are now utilized in the field of projective techniques But there is also a danger in not crystallizing soon enough the hard won gains in this field To expect a measure to correspond to all the variegated manifestations of inner life, such as creativity or anxiety, before accepting it as a measure is asking too much. Let us for a moment review the history of the physical sciences with regard to the development of measurable concepts There was a time when temperature was evaluated in terms of a scale ranging from the hottest day of summer to the coldest day of winter divided into four scale divisions From these crude early beginnings it is a far cry to present day temperature measurement Even the thermometer had its difficulty in being accepted as a measure of temperature It did not always indicate an above-normal deviation when the patient was sick and on certain days when people felt very warm the thermometer did not indicate a correspondingly high temperature

Both of these objections are important, but, if the thermometer makers had thrown away their instruments because they felt that they were not really getting at subjective warmth, a great loss would have occurred to science It is only because the thermometer measured *accurately* what it *did* measure that it was possible to discover the other elements in subjective warmth which make one feel uncomfortable on a warm day Perhaps these psychometric scales which have been developed can serve the same purpose It should not be held against them that they do not tell the whole truth as long as what they *do* tell is *true*. Similar incidents must have occurred when the invention of objective time measures came into conflict with subjective time estimates, and probably even in the history of the measurement of length and the measurement of weight History of science is replete with such events and we should be satisfied that we can find some ways of measuring the phenomena with which we are concerned even though we do not measure their totality Totality of personality, like totality of experience, is infinite, and no single instrument can encompass its entire range We have to limit ourselves to circumscribed areas in all personality evaluation, and an instrument which is specific and circumscribed but *reliable* can in the long run go further than the global measures whose reliability and validity are beyond our ken

If these scaling methods are to prove to be truly useful, it will be necessary to apply to them the usual requirement of zero points, equality of units, presence of a continuum, singularness of the continuum and other prerequisites for true psychological scaling Furthermore, the mere provision of the scale is only the beginning. Methods must be found for validating each scale, and the particular personality correlates, if any, that it corresponds to singly or in patterns

In this connection a very important difficulty arises from the unreliable nature of present day psychiatric categories We cannot depend upon these categories for validation of tests because the categories themselves are notoriously unstable and incapable of providing an objective external criterion for item validation or test evaluation Consequently, the evaluation of personality through interview techniques and through other objectifiable means must proceed hand-in-hand with the creation of instruments for the evaluation of personality characteristics Perhaps one of the more important methods for such evaluation is the technique developed by Kinsey and his co-workers in the area of psychosexual development There is no reason why similar techniques cannot be evolved in the area of vocational interests, educational interests, anxiety, obsessive thinking, compulsion, honesty, dominance, personal values, and other personality traits and characteristics which are so important in clinical diagnosis

One of the neglected areas of diagnostic procedures is that of handwriting analysis This method has the virtue of obtaining its data in a relatively neutral situation and of providing a permanent record of test material or test product Recently, methods have been evolved for scaling some of the outstanding characteristics of handwriting, and an attempt has been made to apply them to the differentiation of mental patients as well as to juvenile delinquents (19). These attempts have not proved entirely successful, but they have opened a way for further, more refined research with such techniques

In addition to the general area of projective techniques, there are other areas now requiring new tools and techniques There have been many tests which have claimed to be sensitive to brain injury or brain lesions Perhaps the most important technique in this area is the one proposed by Goldstein in which it is claimed that patients with organic brain injuries and schizophrenics are less capable of maintaining an abstract attitude in the sorting task than are normal individuals Recent studies with patients on whom it was possible to obtain performance records before brain operation and subsequent records after operation have failed to find any relationship between sorting test performance and injury or removal of brain tissue Most of the patients did not alter their performance on the sorting test after operation in a significant way While this is not conclusive proof of the ineffectual character of sorting test procedures, it does cast severe doubts on the claims that have been made for such tests A revision of our concepts in this field is urgently called for and the provision of newer sorting techniques such as those of the Wisconsin Sorting Test (9) and of the types of tests utilized in the Columbia Greystone Project (6) may perhaps yield a clarification of the issue of abstract versus concrete thinking The chief outcome of these brain operations seems to be a change not in intelligence, not in sorting ability, and not in any of our projective techniques, but in clinically-observable lessening of anxiety and tenseness so that a better performance is elicited after operation than before Up to this time, no generally reliable indicators of anxiety or its loss have been available to psychology

We now come to the question of what methodologies are available for evaluating the outcome of such testing procedures and their application to clinical cases The present day statistically-designed experiments provide a much better opportunity than did the earlier experiments for evaluating our experimental variables However, they are still group-centered rather than individual-centered There is a great need today for transforming our group-centered ideas about statistical treatment to individual-centered procedures Perhaps it might be possible to make an individual-to-group transformation in psychological statistics similar to the point-to-line transformation that is possible in projective geometry, where theorems about lines, that is, groups of points, can be transformed into theorems about points or intersections of lines At the present time, the only useful technique in this area is that of the psychograph Unreliable as it is, and undefinable as it is, it still provides a more useful procedure in the understanding of the wider gamuts of personality than is now afforded by the single score Perhaps we might go a step further and introduce a new concept, or rather, redefine an old concept in new terms The typologists have suffered severe set-backs whenever statistical procedures were introduced to evaluate the existence of a type or its distribution There is, however, a need for the concept of type in clinical work, since by stressing types we get closer to the individual The general stress of the psychometrician in the past has been on individual differences, but the clinician is concerned not with individual differences but with individual similarities His primary question is "how much alike are these two patients and are they really sufficiently alike to be classified into one group?"

Statistics may be of some help in this connection The first step might be to define a type as follows: Whenever a series of tests are given and it is found that a particular pattern or combination of test scores occurs in a given group of individuals with such frequency that it is inexplicable on the basis of chance, we shall call such a combination a type This type need not necessarily correspond to any psychobiological entity and may simply be designated as a tentative type, but it may provide a means for finding out why it is that a particular group of individuals cohere and what else they have in common In this way, it may be feasible to find the underlying similarities of a group of schizophrenics or psychopathic personalities We may thus find the nuclear types and the sub-groups deviating in various directions from the nuclear types. This kind of approach has already been applied to questionnaire material, and definite empirical patterns were discovered which characterized one group rather than another in a statistically-significant manner (22)

Another approach which merits further exploration is that of concomitant variation It has been demonstrated time and again that certain clinical variables correlate with certain personality traits in a statistical manner, for example, it has been demonstrated that the number of responses on the Rorschach test correlate about 45 or 50 with the intelligence score obtained on the Wechsler-Bellevue Intelligence Test. With the coming of somatic therapy under whose effects personality often changes considerably within a short period of time, it becomes possible to determine whether the given trait, let us say for example anxiety, and a given variable, say uncontrolled chiaroscuro responses on the Rorschach test, tend to vary together so that if the patient loses his anxiety he will also tend to lose in the number of chiaroscuro responses and vice-versa Such investigations have rarely been attempted before, but with the coming of the somatic therapies and with pre- and post-operative testing this concomitant variation can be studied For example, in the topectomy operation (6) there was very little concomitant variation between traits and scores which originally were correlated pre-operatively, but in a few instances it was possible to find measures which co-varied with changes in anxiety but whose initial level did not correlate with the initial anxiety level This second dimension of variation in time needs to be exploited in order to understand the dynamic relations between personality trait and test variable.

There is also a need for more sophisticated statistical methodology to make the comparisons necessary in clinical work For example, it would be highly desirable to develop further the inverse factor analysis approach and to continue work with discriminant functions By a combination of factor analysis and pattern analysis and the investigation of types as defined earlier we may be able to integrate our clinical findings in such fashion that they become a fruitful basis for further inquiry

SUMMARY

There is need for new types of tests to supplement the present day objective tests that are available to the clinician These new types of tests are primarily for the areas of mental content which are either hidden from the subject himself, or if not hidden, are suppressed by him because of social and personal reasons The desirable characteristics of each of these tests were presented and each of the present day projective techniques was evaluated in terms of these criteria Nearly all of these projective techniques were found wanting on one score or another, and it became necessary to provide new approaches to the evaluation of the old techniques or to create entirely new techniques With regard to the new approaches to the evaluation of the old techniques, it was suggested that psychometric scaling devices could be applied to each of the many variables which clinicians use in evaluation of such tests as the Rorschach, TAT, Bender-Visual Gestalt

Test, Handwriting Analysis and so forth In addition, it was suggested that the cumbersomeness and awkwardness of the present day techniques was such that only by reducing their complexity would it be possible to get satisfactory test scores which would be useful clinically and experimentally One such approach consisted of reducing the Rorschach into its components, giving rise to such tests as movement-blots, color-cut-outs, contour blots and so forth Another approach, emanating from the word-association technique, is to project a stimulus word tachistoscopically and determine recognition time for correct recognition of the exposed word as well as the nature and character of the mis-recognitions during the presolution period

Before developing these new techniques and bringing them to a level of standardization which is required for individual diagnosis, several needs must be met First, we must realize that these techniques will not evaluate the total personality but will be limited to segments of the personality. That such answers are useful though not entirely satisfactory can be demonstrated both from the history of the development of science as well as from the practical use of such techniques at the present time Eventually, we shall have to provide for these scaling devices such essential elements as zero points, equality of units, and the other desiderata of psychometric scales The areas in which new procedures can be utilized to great advantage are expressive movement, the interview technique à la Kinsey, and similar approaches. With regard to methodology it becomes necessary to develop new statistical techniques for the treatment of individual data Among these, the development of rigorously defined types, even though they be tentative types, as a guide for further study is highly desirable, and it is suggested that, at least for the present, we define as a type any grouping of people who have the same pattern of scores and whose group frequency is greater than would be expected by chance Another avenue of investigation is opened up through the development of the somatic therapies which alter in a short period of time the traits and characteristics of mental patients This new dimension of change with time can be related to change in score and in that way a more dynamic relation between test scores and psychological functioning can be established. Such techniques as inverse factor analysis, discriminant functions and pattern analysis can provide methods for integrating present day clinical data

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